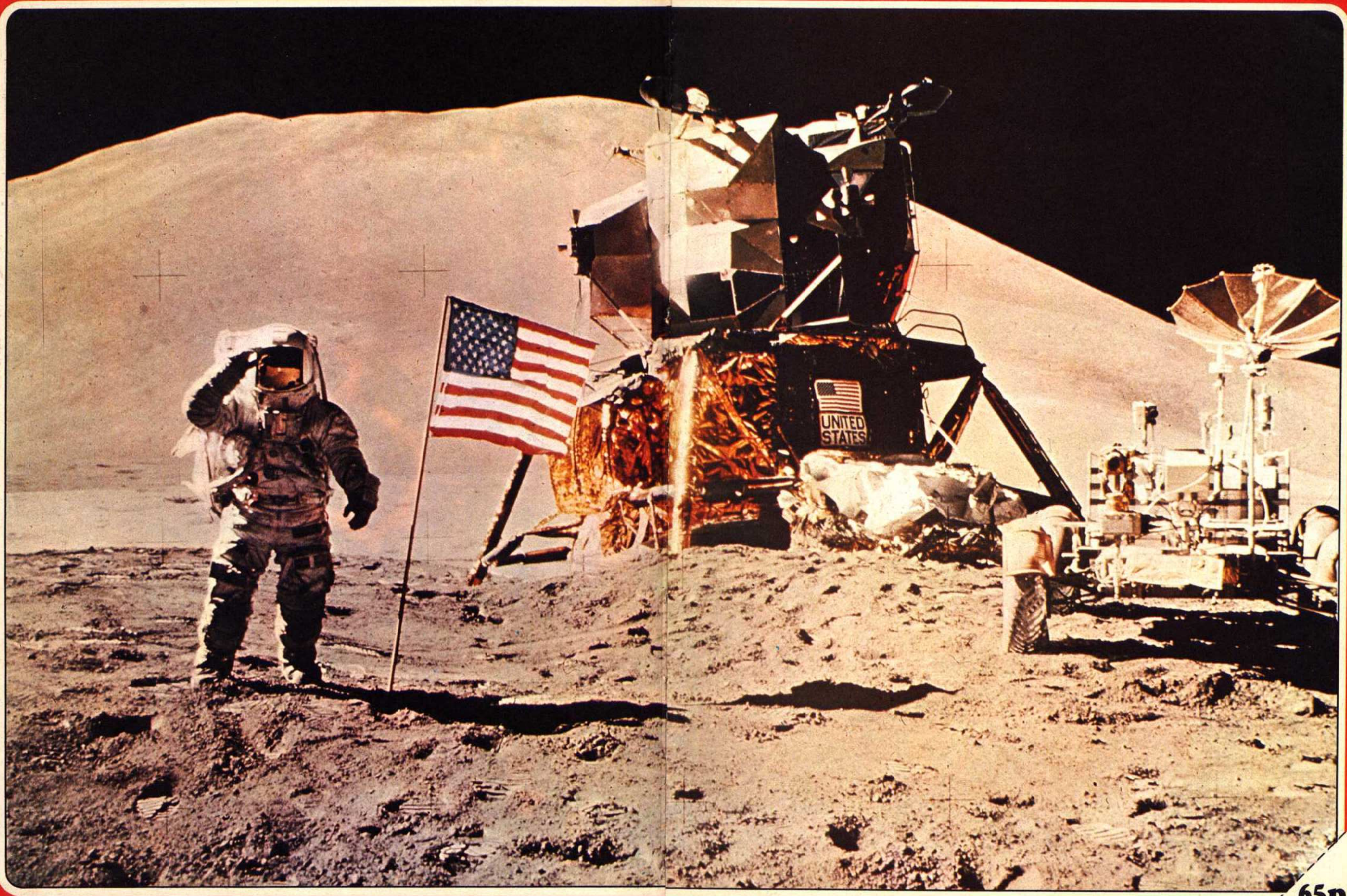
COUNTDOWN annual 1973

countdown
annual

FOR
TV action

UFO · Thunderbirds
The Persuaders · Dr. Who
and other TV favourites


UNITED STATES

65p

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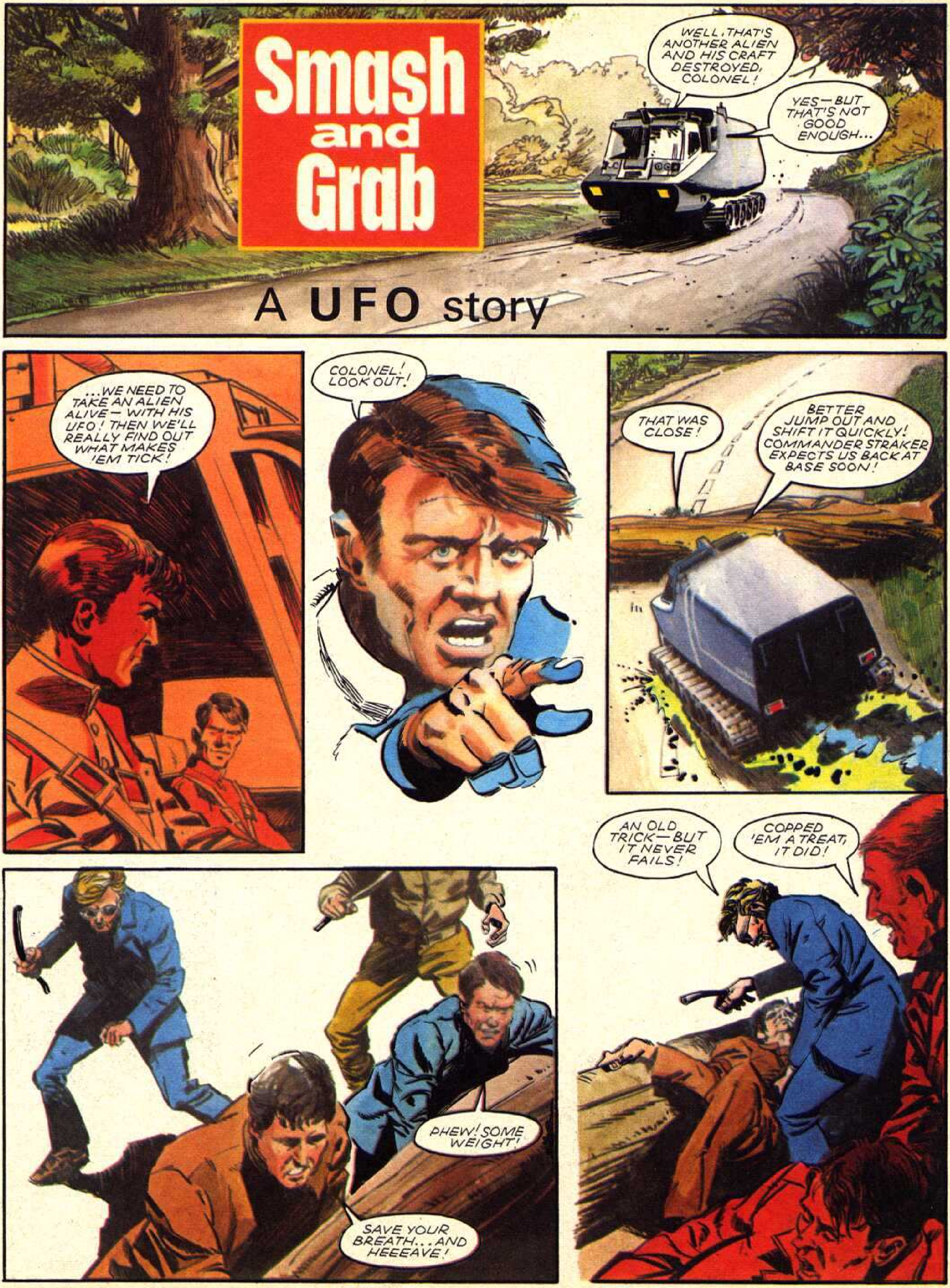
Smash and Grab

A UFO story


WELL, THAT'S ANOTHER ALIEN AND HIS CRAFT DESTROYED, COLONEL!
YES—BUT THAT'S NOT GOOD ENOUGH...
...WE NEED TO TAKE AN ALIEN ALIVE—WITH HIS UFO! THEN WE'LL REALLY FIND OUT WHAT MAKES 'EM TICK!
COLONEL! LOOK OUT!
THAT WAS CLOSE!
BETTER JUMP OUT AND SHIFT IT QUICKLY! COMMANDER STRAKER EXPECTS US BACK AT BASE SOON!
PHEW! SOME WEIGHT!
SAVE YOUR BREATH... AND HEEEAVE!
AN OLD TRICK—BUT IT NEVER FAILS!
COPPED 'EM A TREAT, IT DID!

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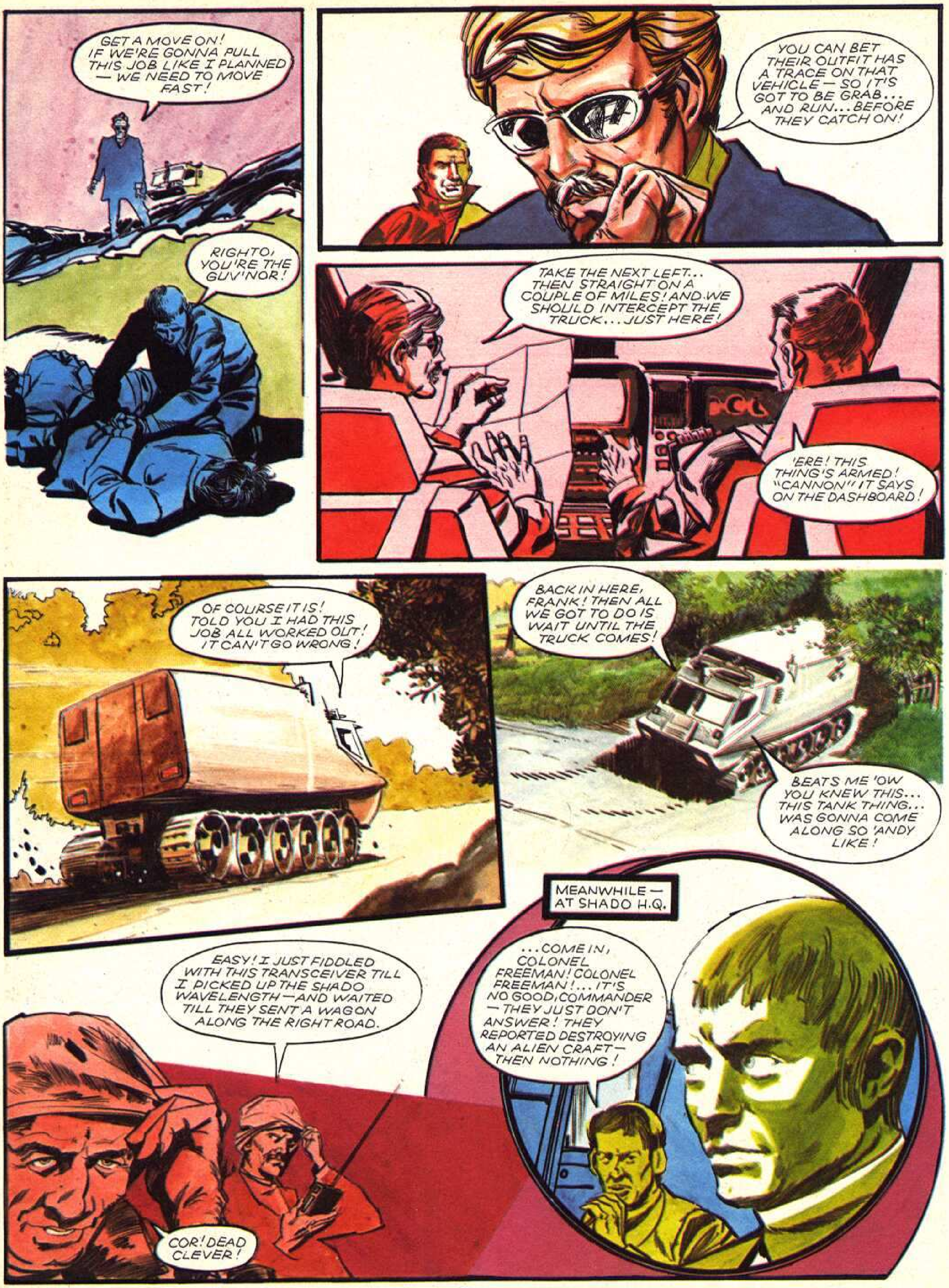
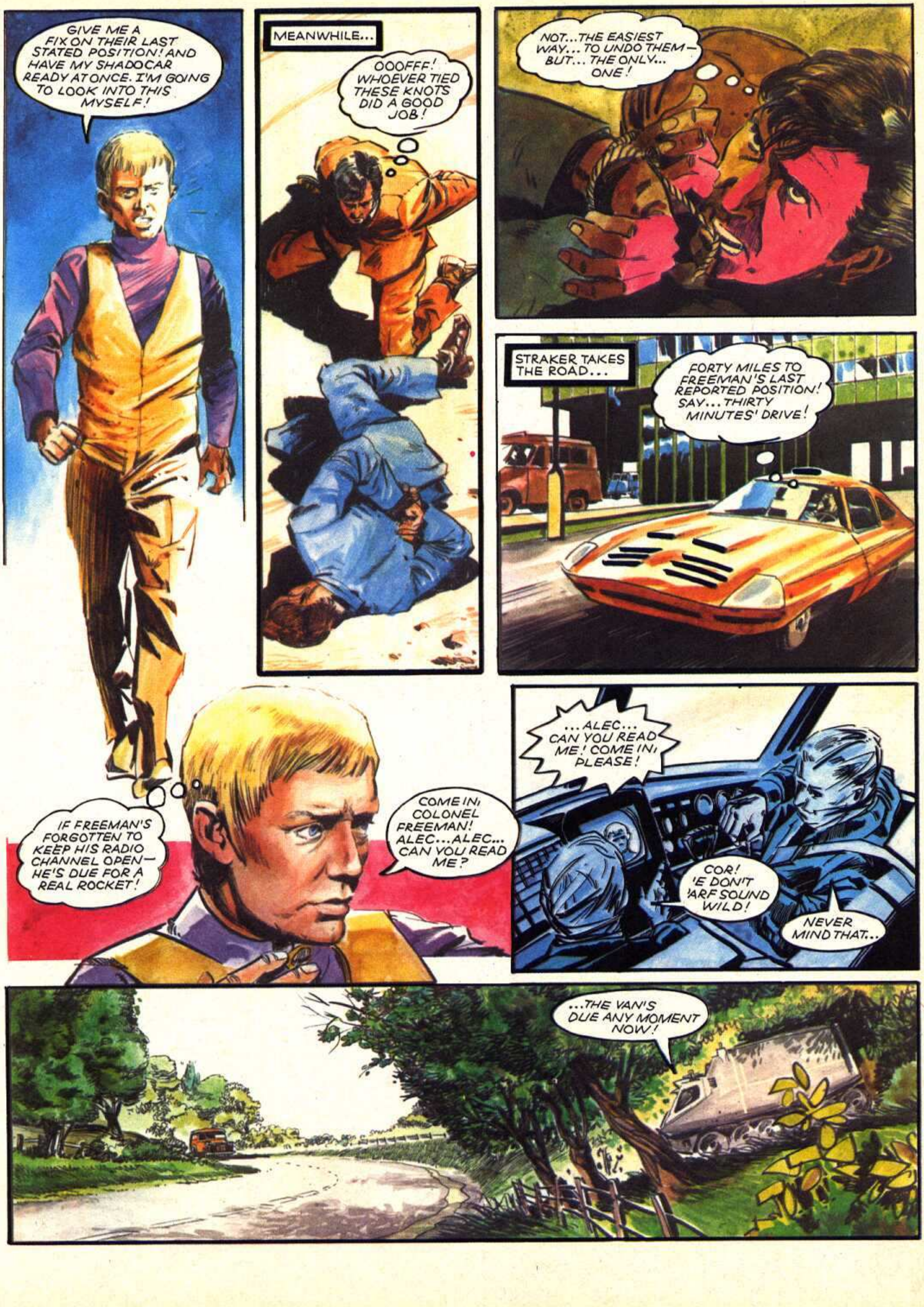
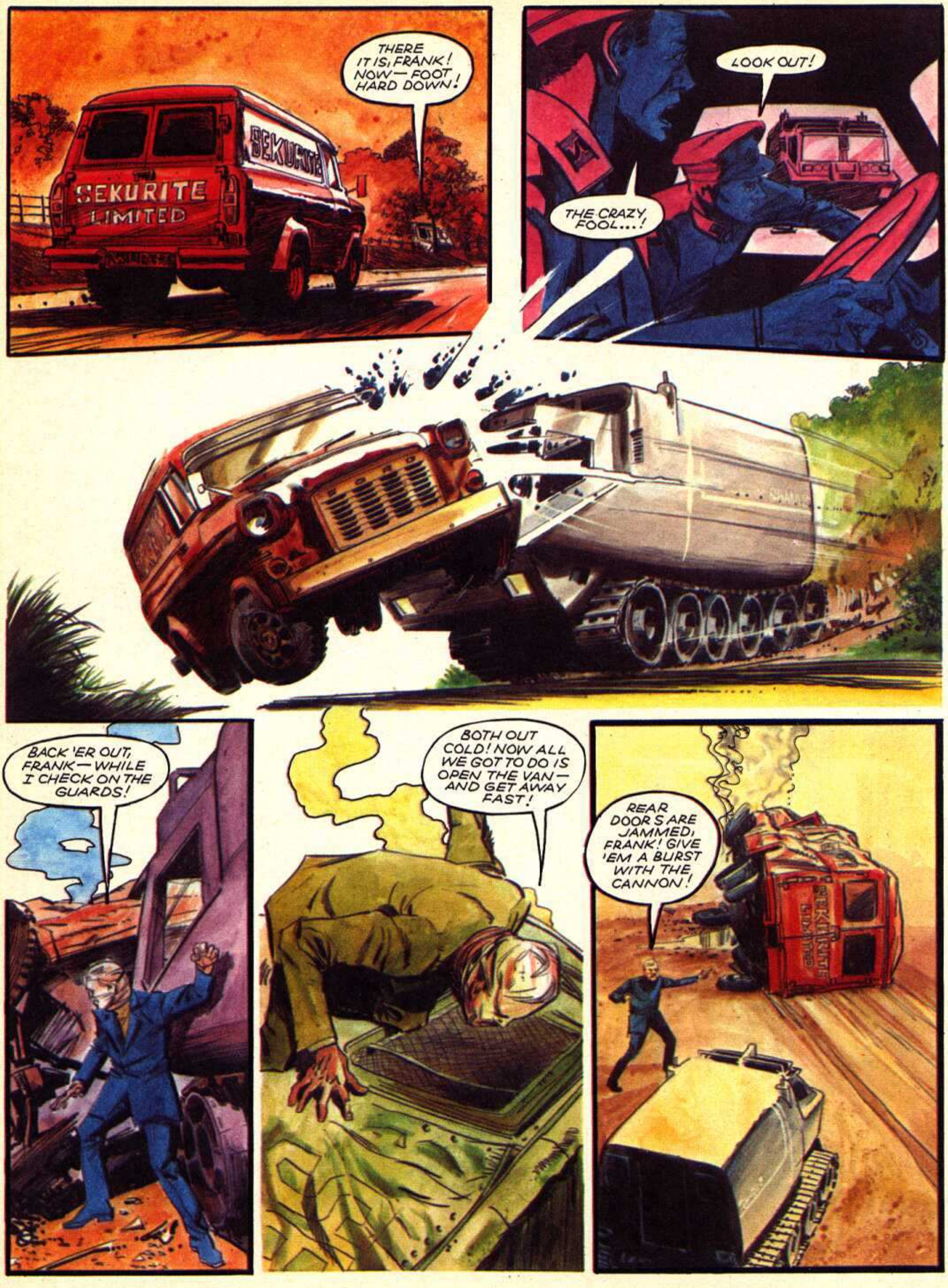
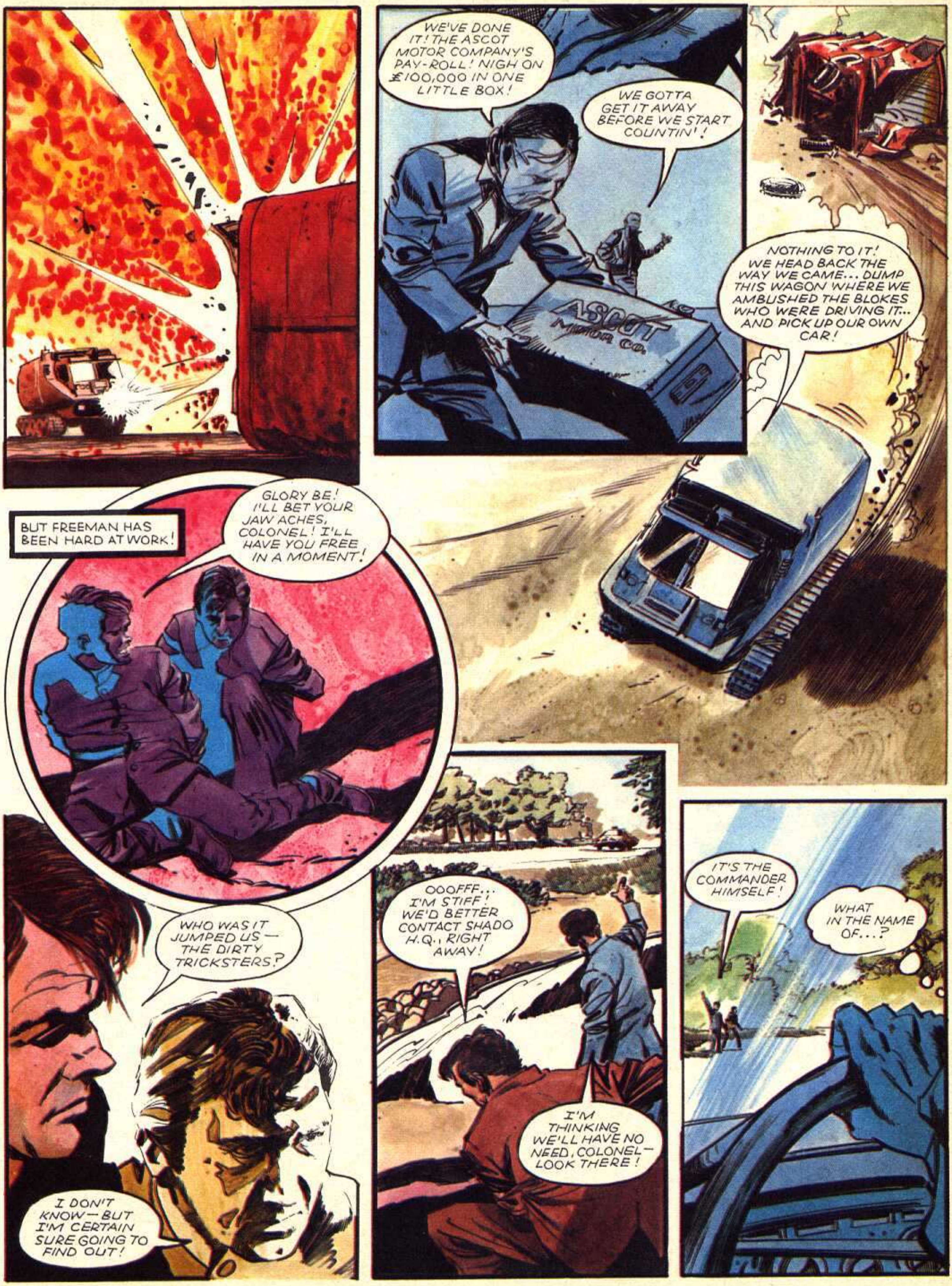
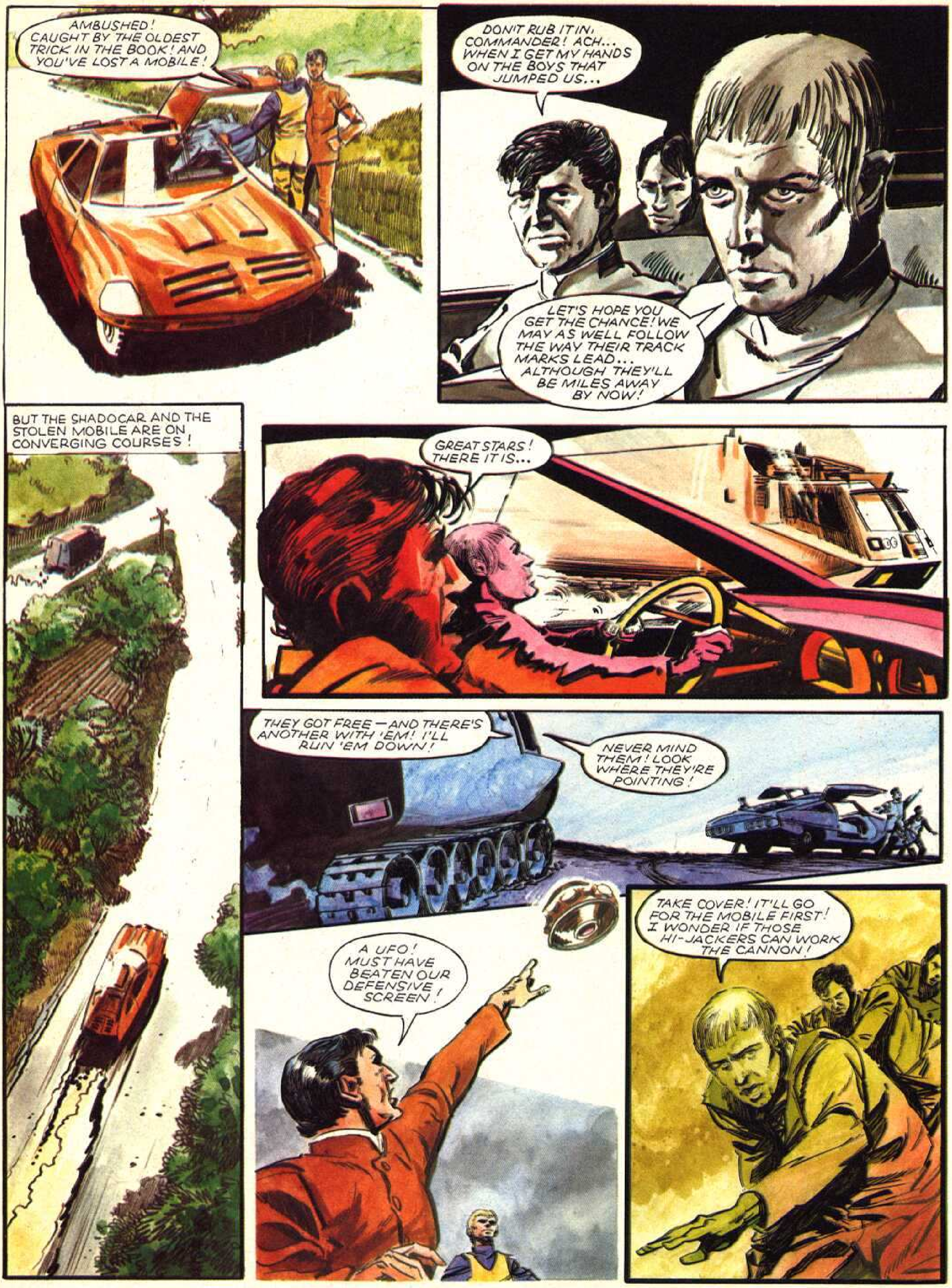
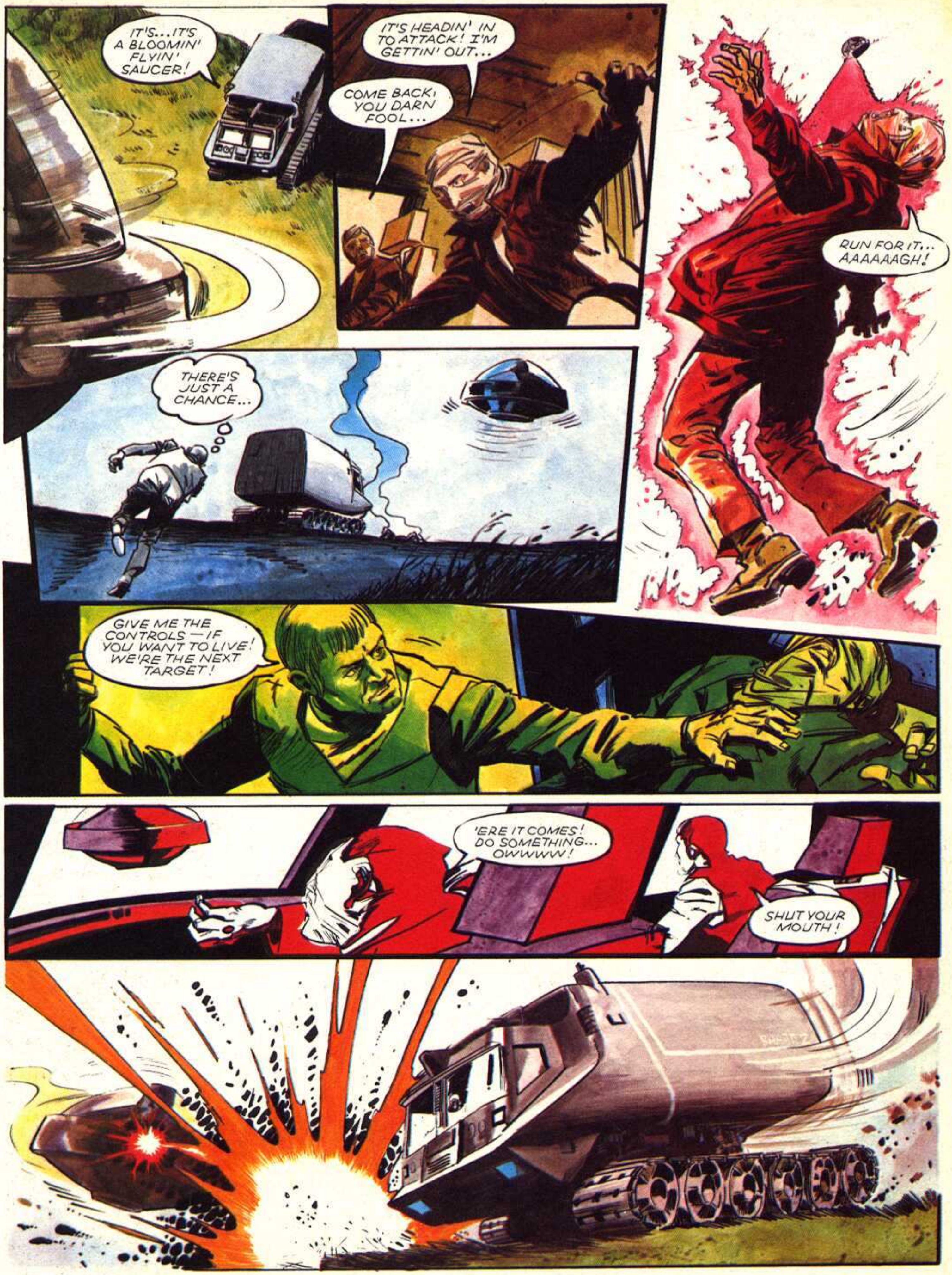

GET A MOVE ON! IF WE'RE GONNA PULL THIS JOB LIKE I PLANNED — WE NEED TO MOVE FAST!
YOU CAN BET THEIR OUTFIT HAS A TRACE ON THAT VEHICLE — SO IT'S GOT TO BE GRAB... AND RUN... BEFORE THEY CATCH ON!
RIGHTO, YOU'RE THE GUV'NOR!
TAKE THE NEXT LEFT... THEN STRAIGHT ON A COUPLE OF MILES! AND WE SHOULD INTERCEPT THE TRUCK... JUST HERE!
'ERE! THIS THING'S ARMED! "CANNON" IT SAYS ON THE DASHBOARD!
OF COURSE IT IS! TOLD YOU I HAD THIS JOB ALL WORKED OUT! IT CAN'T GO WRONG!
BACK IN HERE, FRANK! THEN ALL WE GOT TO DO IS WAIT UNTIL THE TRUCK COMES!
BEATS ME 'OW YOU KNEW THIS... THIS TANK THING... WAS GONNA COME ALONG SO 'ANDY LIKE!
EASY! I JUST FIDDLED WITH THIS TRANSCEIVER TILL I PICKED UP THE SHADO WAVELENGTH — AND WAITED TILL THEY SENT A WAGON ALONG THE RIGHT ROAD.
COR! DEAD CLEVER!
MEANWHILE — AT SHADO H.Q.
...COME IN, COLONEL FREEMAN! COLONEL FREEMAN!... IT'S NO GOOD, COMMANDER — THEY JUST DON'T ANSWER! THEY REPORTED DESTROYING AN ALIEN CRAFT — THEN NOTHING!

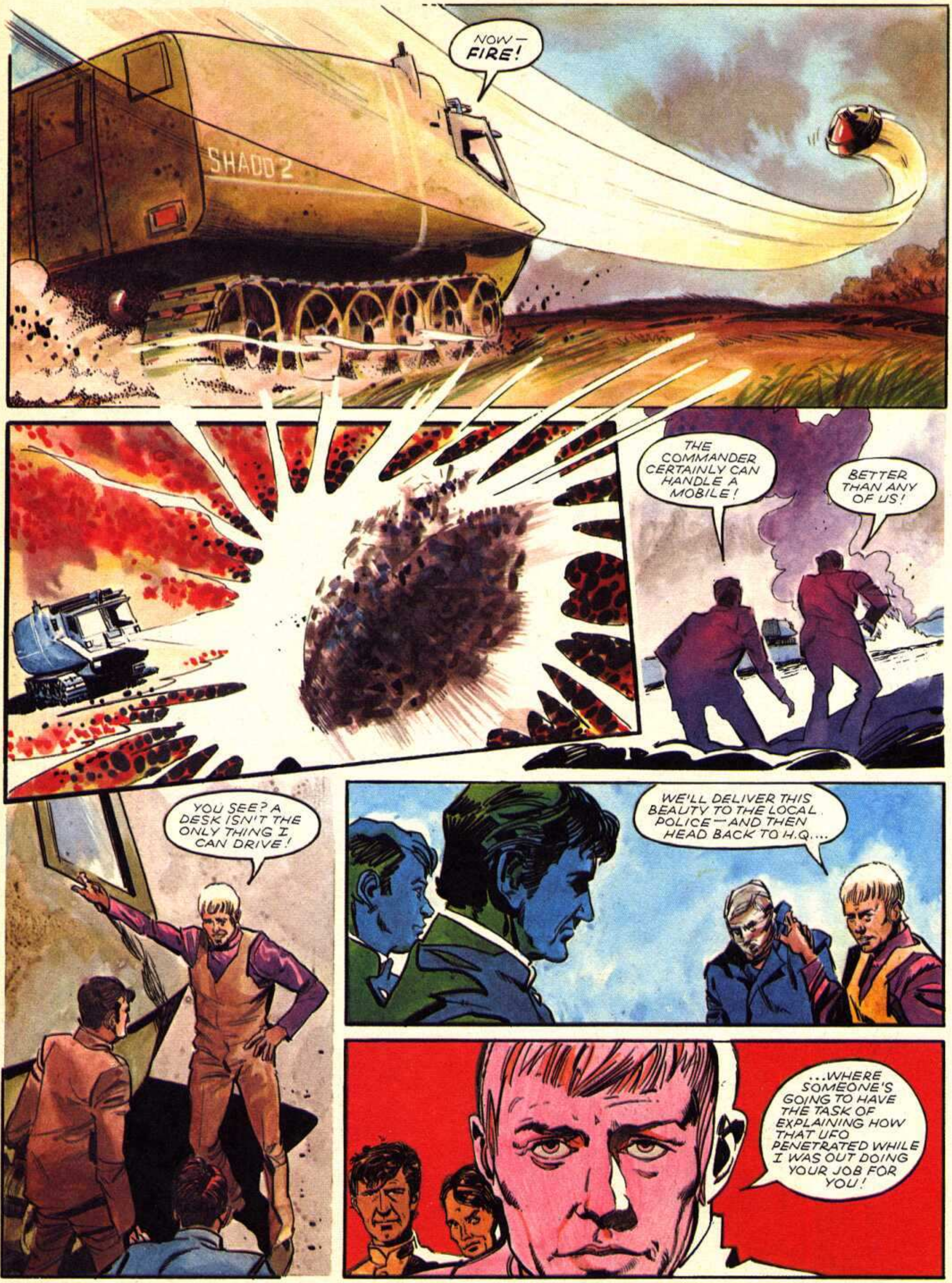

GIVE ME A FIX ON THEIR LAST STATED POSITION! AND HAVE MY SHADOCAR READY AT ONCE. I'M GOING TO LOOK INTO THIS MYSELF!
MEANWHILE...
OOOFFF! WHOEVER TIED THESE KNOTS DID A GOOD JOB!
NOT... THE EASIEST WAY... TO UNDO THEM— BUT... THE ONLY... ONE!
STRAKER TAKES THE ROAD...
FORTY MILES TO FREEMAN'S LAST REPORTED POSITION! SAY... THIRTY MINUTES' DRIVE!
IF FREEMAN'S FORGOTTEN TO KEEP HIS RADIO CHANNEL OPEN— HE'S DUE FOR A REAL ROCKET!
COME IN, COLONEL FREEMAN! ALEC...ALEC... CAN YOU READ ME?
...ALEC... CAN YOU READ ME! COME IN, PLEASE!
COR! 'E DON'T 'ARF SOUND WILD!
NEVER MIND THAT...
...THE VAN'S DUE ANY MOMENT NOW!


THERE IT IS, FRANK! NOW— FOOT HARD DOWN!
SEKURITE LIMITED
LOOK OUT!
THE CRAZY FOOL...!
BACK 'ER OUT, FRANK— WHILE I CHECK ON THE GUARDS!
BOTH OUT COLD! NOW ALL WE GOT TO DO IS OPEN THE VAN— AND GET AWAY FAST!
REAR DOORS ARE JAMMED, FRANK! GIVE 'EM A BURST WITH THE CANNON!

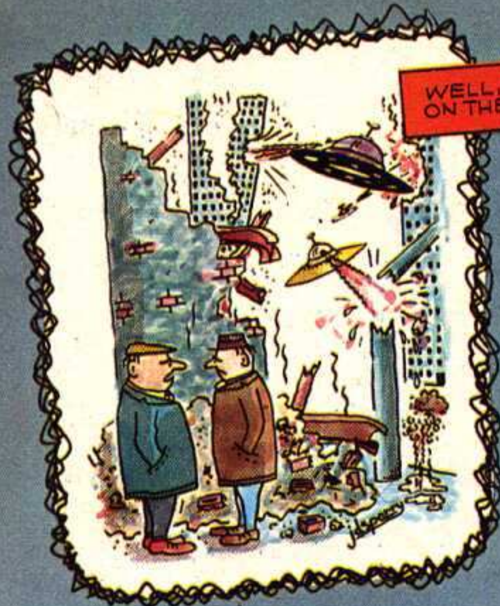

WE'VE DONE IT! THE ASCOT MOTOR COMPANY'S PAY-ROLL! NIGH ON £100,000 IN ONE LITTLE BOX!
WE GOTTA GET IT AWAY BEFORE WE START COUNTIN'!
ASCOT MOTOR CO.
NOTHING TO IT! WE HEAD BACK THE WAY WE CAME... DUMP THIS WAGON WHERE WE AMBUSHED THE BLOKES WHO WERE DRIVING IT... AND PICK UP OUR OWN CAR!
BUT FREEMAN HAS BEEN HARD AT WORK!
GLORY BE! I'LL BET YOUR JAW ACHES, COLONEL! I'LL HAVE YOU FREE IN A MOMENT!
WHO WAS IT JUMPED US — THE DIRTY TRICKSTERS?
I DON'T KNOW — BUT I'M CERTAIN SURE GOING TO FIND OUT!
OOOFFF... I'M STIFF! WE'D BETTER CONTACT SHADO H.Q., RIGHT AWAY!
I'M THINKING WE'LL HAVE NO NEED, COLONEL — LOOK THERE!
IT'S THE COMMANDER HIMSELF!
WHAT IN THE NAME OF...?


AMBUSHED! CAUGHT BY THE OLDEST TRICK IN THE BOOK! AND YOU'VE LOST A MOBILE!
DON'T RUB IT IN, COMMANDER! ACH... WHEN I GET MY HANDS ON THE BOYS THAT JUMPED US...
LET'S HOPE YOU GET THE CHANCE! WE MAY AS WELL FOLLOW THE WAY THEIR TRACK MARKS LEAD... ALTHOUGH THEY'LL BE MILES AWAY BY NOW!
BUT THE SHADOCAR AND THE STOLEN MOBILE ARE ON CONVERGING COURSES!
GREAT STARS! THERE IT IS...
THEY GOT FREE — AND THERE'S ANOTHER WITH 'EM! I'LL RUN 'EM DOWN!
NEVER MIND THEM! LOOK WHERE THEY'RE POINTING!
A UFO! MUST HAVE BEATEN OUR DEFENSIVE SCREEN!
TAKE COVER! IT'LL GO FOR THE MOBILE FIRST! I WONDER IF THOSE HI-JACKERS CAN WORK THE CANNON!

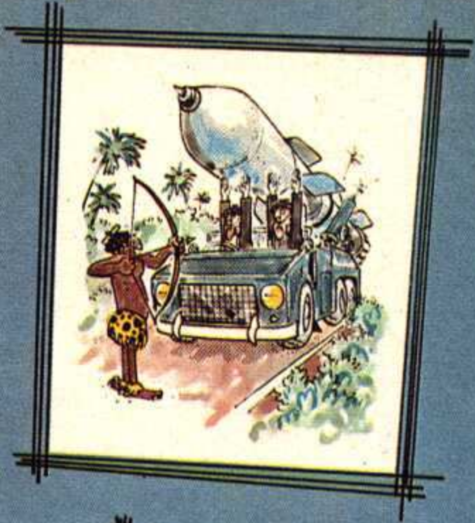

IT'S... IT'S A BLOOMIN' FLYIN' SAUCER!
IT'S HEADIN' IN TO ATTACK! I'M GETTIN' OUT...
COME BACK, YOU DARN FOOL...
RUN FOR IT... AAAAAAGH!
THERE'S JUST A CHANCE...
GIVE ME THE CONTROLS — IF YOU WANT TO LIVE! WE'RE THE NEXT TARGET!
'ERE IT COMES! DO SOMETHING... OWWWW!
SHUT YOUR MOUTH!

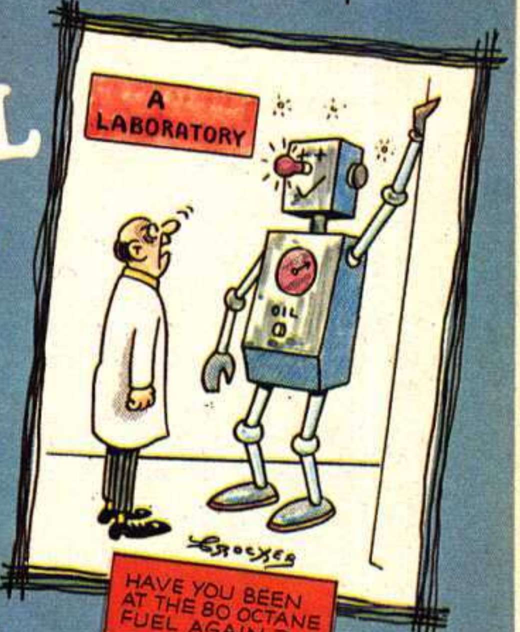

NOW— FIRE!
SHADO 2
THE COMMANDER CERTAINLY CAN HANDLE A MOBILE!
BETTER THAN ANY OF US!
YOU SEE? A DESK ISN'T THE ONLY THING I CAN DRIVE!
WE'LL DELIVER THIS BEAUTY TO THE LOCAL POLICE—AND THEN HEAD BACK TO H.Q....
...WHERE SOMEONE'S GOING TO HAVE THE TASK OF EXPLAINING HOW THAT UFO PENETRATED WHILE I WAS OUT DOING YOUR JOB FOR YOU!

COMICAL COSMOS

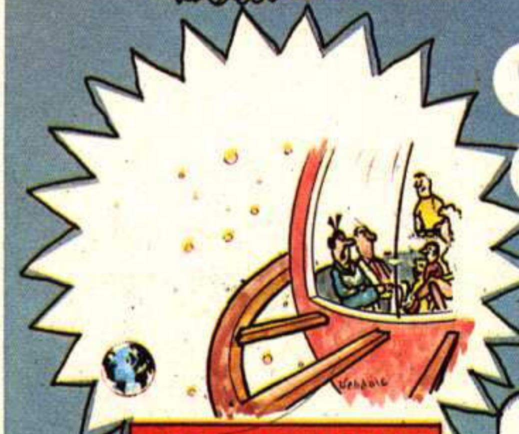


WELL, I BLAME IT ALL ON THE COMMON MARKET.



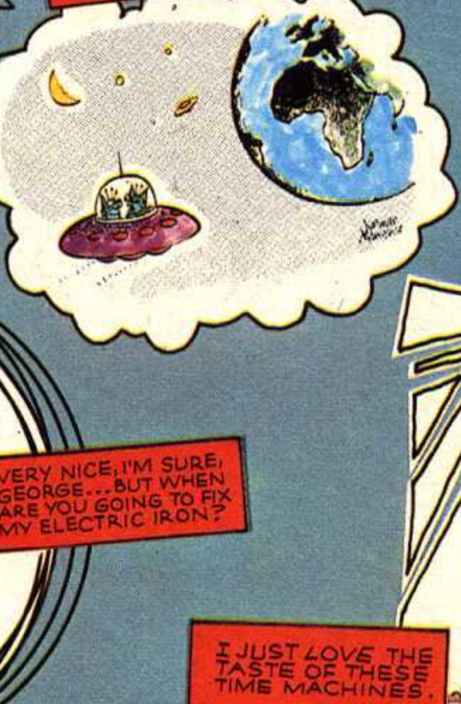


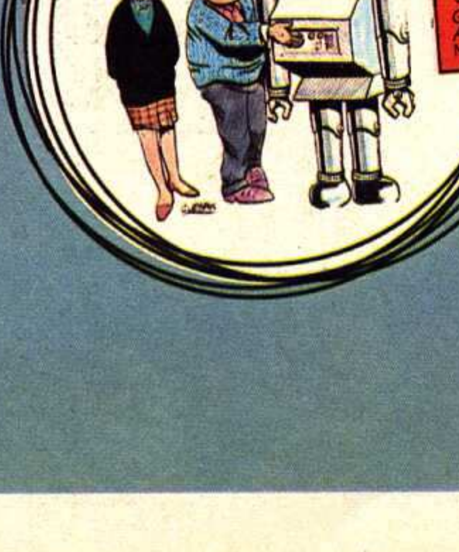
HAVE YOU BEEN AT THE 80 OCTANE FUEL AGAIN?



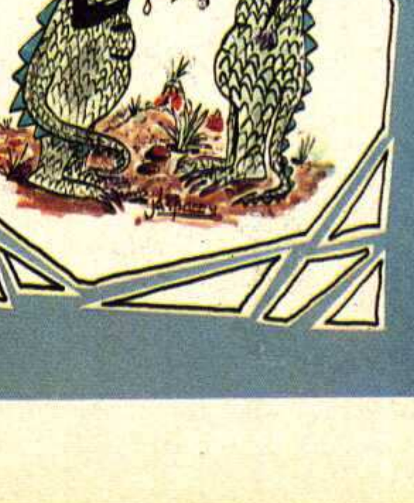
WE'D VISIT YOU MORE OFTEN — BUT IT'S THAT AWFUL WAIT FOR THE 11 BUS TO VICTORIA.

HOW MANY CIGARETTES ARE WE ALLOWED TO BRING BACK?





VERY NICE, I'M SURE, GEORGE... BUT WHEN ARE YOU GOING TO FIX MY ELECTRIC IRON?



I JUST LOVE THE TASTE OF THESE TIME MACHINES.

apollo 15

Scientific Treasure Ship

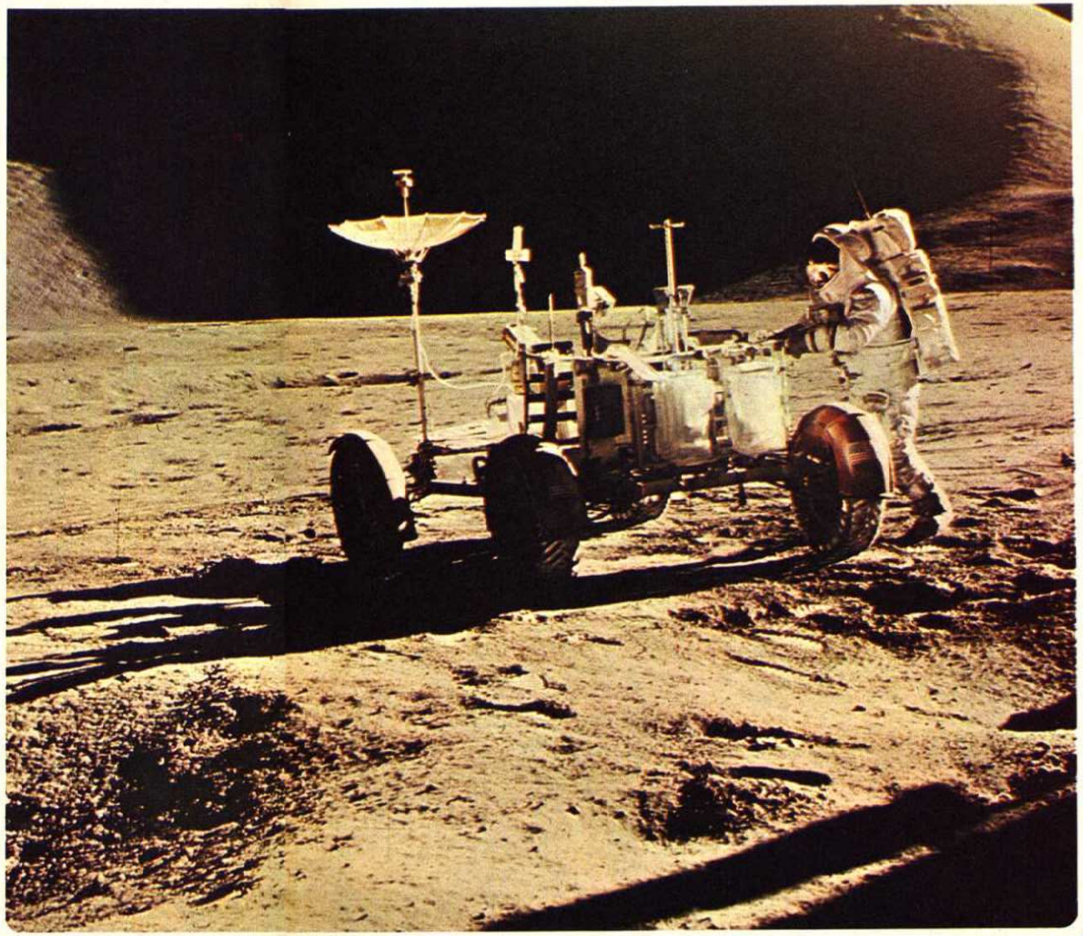
Of all the Moon missions successfully launched, Apollo 15 must be rated as the most rewarding, not only in technical achievement but for the amazing scientific treasures brought back to Earth. It was a fine summer evening in 1971 when astronaut David Scott radioed back to Mission Control, Houston, Texas: "Falcon is on the plain at Hadley."

These seven words meant that the LM had landed safely at the foot of some of the Moon's highest mountains. It also meant that lunar exploration was about to enter a new phase – one of serious scientific discovery.

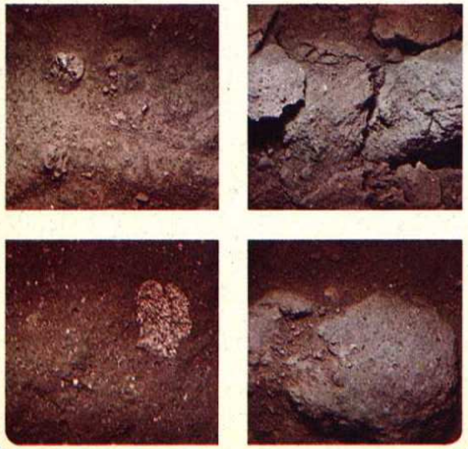
Backed by three earlier Apollo Moon landings, 15 proved beyond doubt just how reliable the rocket and spacecraft systems had really become.

It is already clear that future generations will have to know much more about the minerals and other resources locked up by prehistoric, cataclysmic upheavals, at the time the Earth was formed. As we have seen so brilliantly demonstrated on our TV sets, the exploration of the Moon can help us to unlock these secrets. By careful study of a surface, untouched by eroding wind and rain, America's space scientists gleaned new knowledge on the first two or three thousand years of Earth's own history.

With the highly efficient Lunar Rover, which covered 17 miles in all, and its colour TV camera, the first trek alone, lasting 6 hours 33 minutes, produced a wealth of rock samples and a taste of geological observation from the astronauts, which in itself had the world's scientists buzzing with excitement. After a total of 18 hours 35 minutes out on the surface, the Falcon crew broke all records and proved beyond doubt that, given the necessary life support systems, man can exist on the Moon.



Above: Jim Irwin checking the gear, before the Lunar Rover sets out on its history-making first journey.



Left: These samples of Moon rock, covered in powdery dust, were collected by the Apollo 11 astronauts from the Sea of Tranquillity.

Right: With Mount Hadley behind him, Dave Scott toils up a steep incline for more interesting samples.

"CLEAN" ROCKS

It was on their second trip that the astronauts found the stone that was later named the Genesis rock. A beautiful crystalline fragment containing minerals, believed to have made up the very first solid lunar crust.

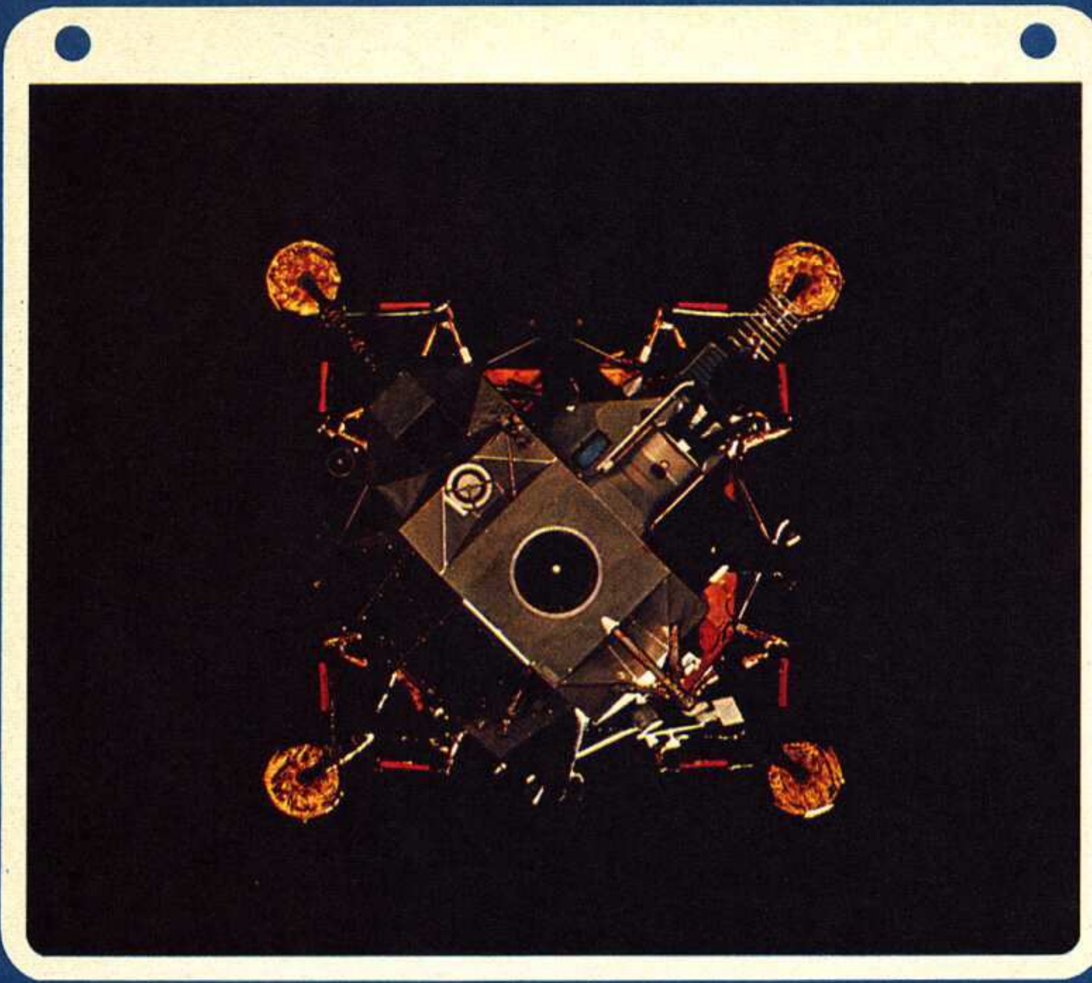
Scott and Irwin were delighted to find more "clean" rocks than any of their predecessors. These were stones not covered with Moon dust, their colour and texture easily distinguishable at a distance of 15 feet. At one point Jim Irwin took a picture of a cluster of these clean rocks and commented: "It was just as if we'd hit a gold mine."

The three treks upset several theories about the Moon. The mountains which everybody had expected to be fearsome, jagged peaks were rounded, giving the whole area a somewhat gentle appearance.

Another surprise was the layering on the walls of the rille and on the mountain sides. It was discovered that the strata on the rille ran horizontally while those on the mountains ran diagonally, which indicates that they were formed at different times. Confirming that the lunar surface was built up in stages – by many lava flows, or by showers of rock thrown up when other celestial objects collided with the Moon.

One small mystery concerned the surface dust. While the astronauts on foot sometimes sank five or six inches deep, the treads of the vehicle just marked the surface and never sank lower than half an inch.

Core samples, some nearly eight feet long, contained as many as 44



A glad sight for Al Worden when *Falcon* returns to *Endeavour* with its priceless scientific load.

different layers. This indicates that there have been at least 44 volcanic eruptions or impacts at the site. Trapped in the core samples were a number of solar particles which are being studied and may yield information on how the Sun influences the Earth's climate.

HEAT EXPERIMENTS

Thermometers placed into two core holes show that the Moon is a hot body. Its heat is concentrated deep in the interior. Measurements of the escape of heat from these experiments have led scientists to predict that radioactive minerals abound inside the Moon, and if these are spread uniformly, the Moon has a molten core at a depth of 300 miles or more.

Other instruments left behind measure meteorite impacts, the lunar magnetic field, the solar wind, the almost non-existent wisps of lunar atmosphere, and moonquakes. Their findings are relayed regularly to Earth by a nuclear-powered generator.

The moonquake detector formed part of a three-station seismic network (the others were set up by the Apollo 12 and 14 astronauts), which shortly afterwards recorded one very deep tremor, originating nearly 500 miles below the surface. Many of the Moon's deep quakes are induced by tidal pull when the Earth and Moon are closest each month, but geologists think that thermal energy – heat from deep inside the Moon – was responsible for the 500-mile-deep tremor.

MINI-QUAKES

The seismic station has also discovered that the Moon is troubled all the time by swarms of tiny earthquakes. These mini-quakes have nothing to do with tides, and are probably triggered off by *mascons* – concentrations of dense materials below the surface of the lunar plains, which are out of balance with the rest of the Moon.

While his colleagues explored the surface, Al Worden carried out the most complete photo survey ever made, plus other important scientific studies from lunar orbit.

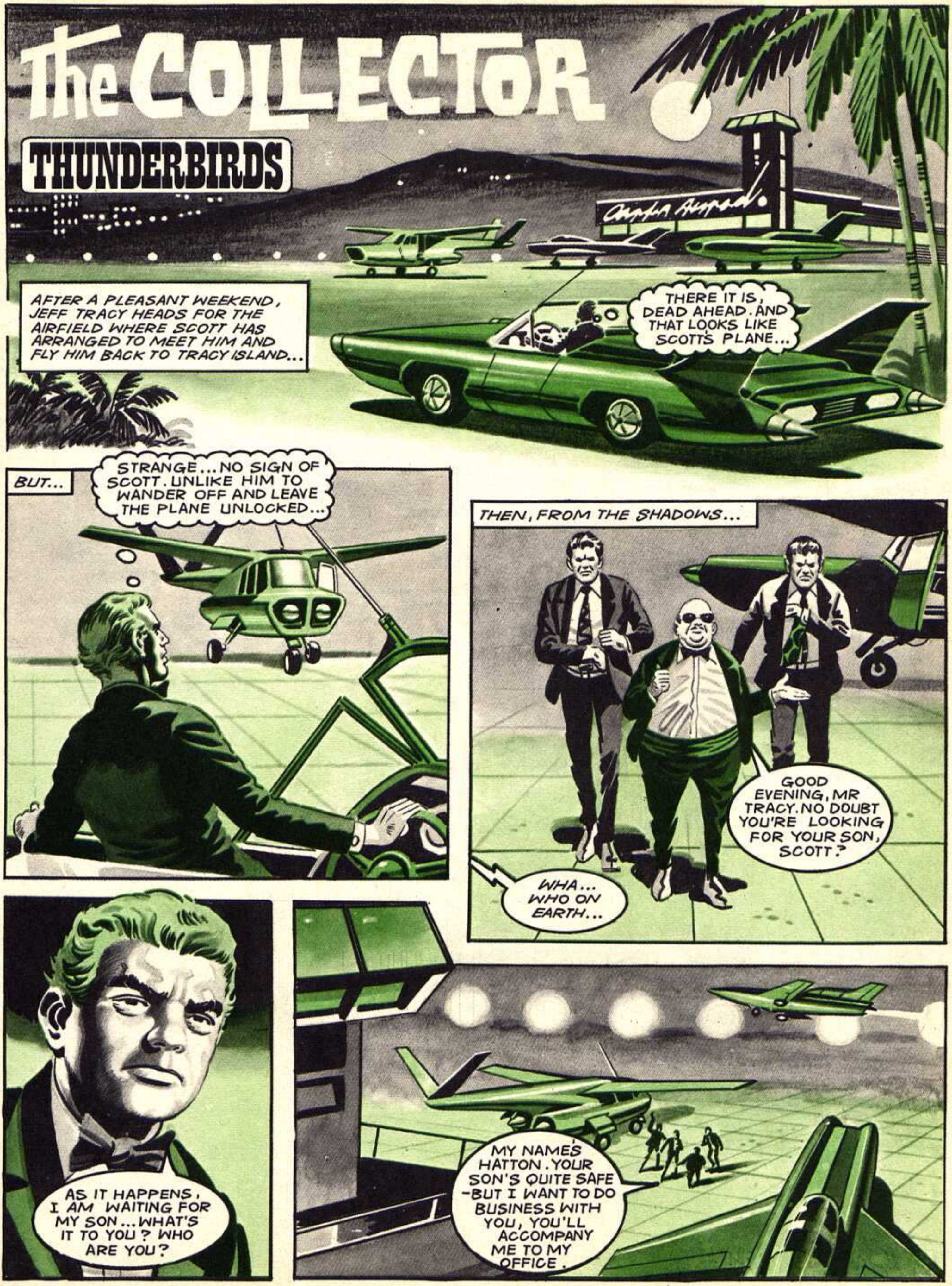
One of the instruments he used, an X-ray detector, found high concentrations of aluminium and sparse amounts of magnesium in the highlands, and the very opposite in the plains. A magnetometer on Worden's command craft detected a very weak lunar magnetic field and another instrument called a gamma ray spectrometer detected radioactive hot spots that indicate concentrations of radioactive elements such as potassium, thorium and uranium.

CINDER CONES

Worden's training as a geological observer paid dividends when he spotted a number of small cone-shaped mounds near the Sea of Serenity, which he recognised as cinder cones – dead volcanic craters.

It is estimated from this evidence that volcanic activity lasted on the Moon until about a thousand million years ago and that the Moon was certainly hot at that time. These cones could also indicate that carbon dioxide and water may have been present for a brief period on the Moon.

Perhaps the aims of Apollo 15 – and of space research in general – are best summed up in the words of David Scott, who reported to Mission Control from the Moon: "As I stand here, in the wonders of the unknown, at Hadley, I try to realise that there is a fundamental truth to our nature. Man must explore. And this is exploration at its greatest."


The COLLECTOR
THUNDERBIRDS
AFTER A PLEASANT WEEKEND, JEFF TRACY HEADS FOR THE AIRFIELD WHERE SCOTT HAS ARRANGED TO MEET HIM AND FLY HIM BACK TO TRACY ISLAND...
THERE IT IS, DEAD AHEAD. AND THAT LOOKS LIKE SCOTT'S PLANE...
BUT...
STRANGE... NO SIGN OF SCOTT. UNLIKE HIM TO WANDER OFF AND LEAVE THE PLANE UNLOCKED...
THEN, FROM THE SHADOWS...
GOOD EVENING, MR TRACY. NO DOUBT YOU'RE LOOKING FOR YOUR SON, SCOTT?
WHA... WHO ON EARTH...
AS IT HAPPENS, I AM WAITING FOR MY SON... WHAT'S IT TO YOU? WHO ARE YOU?
MY NAME'S HATTON. YOUR SON'S QUITE SAFE -BUT I WANT TO DO BUSINESS WITH YOU. YOU'LL ACCOMPANY ME TO MY OFFICE.

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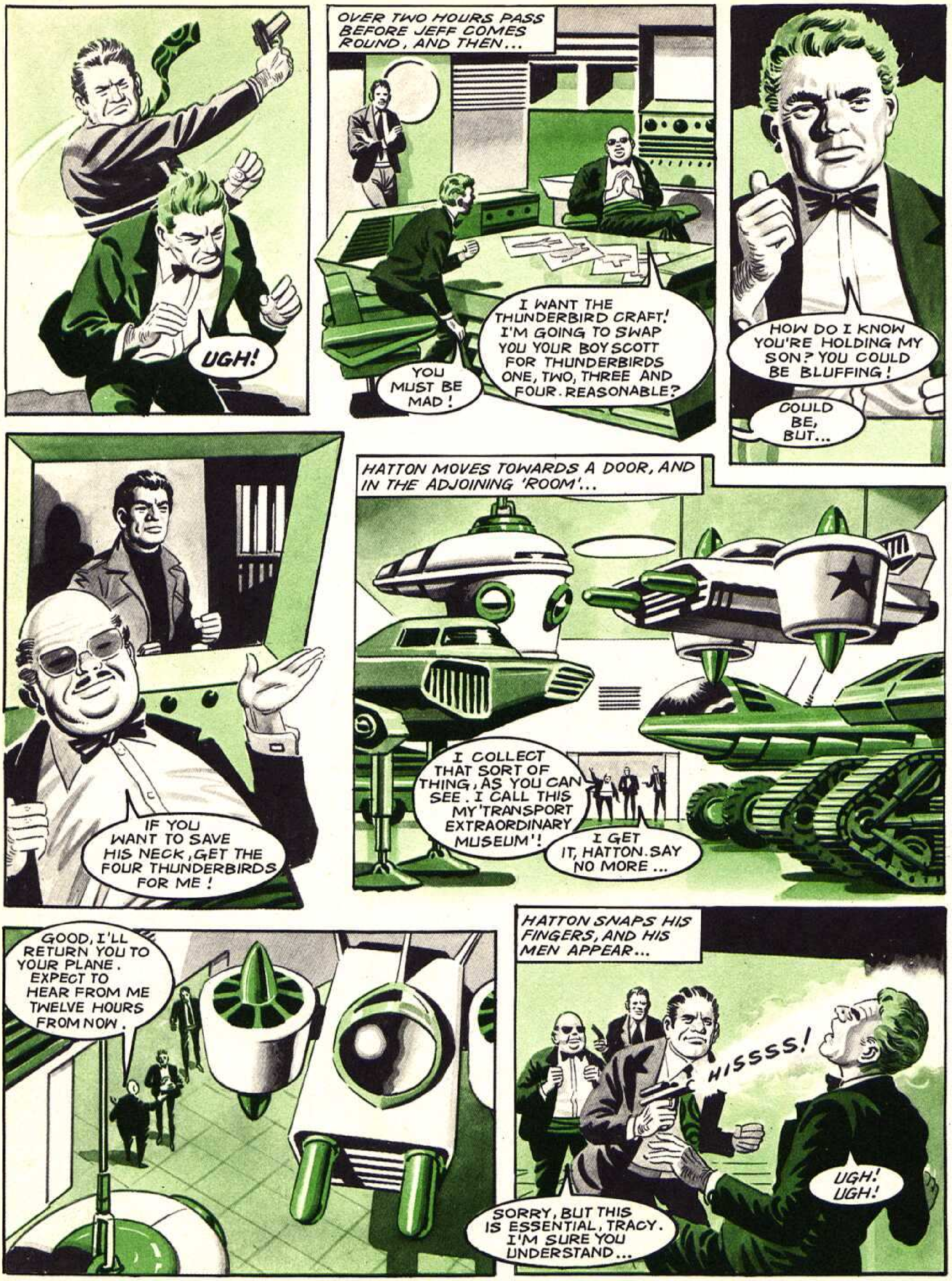
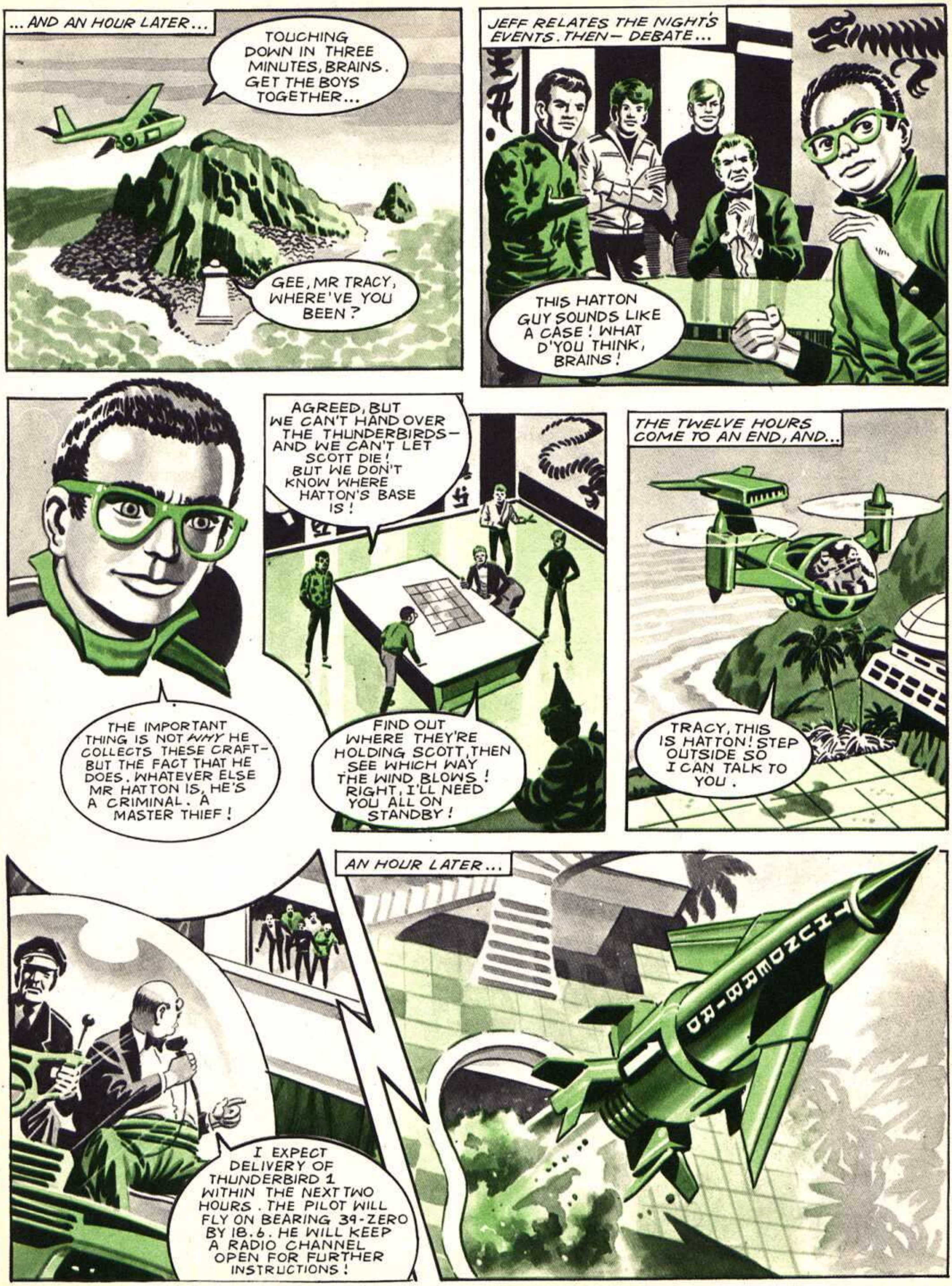
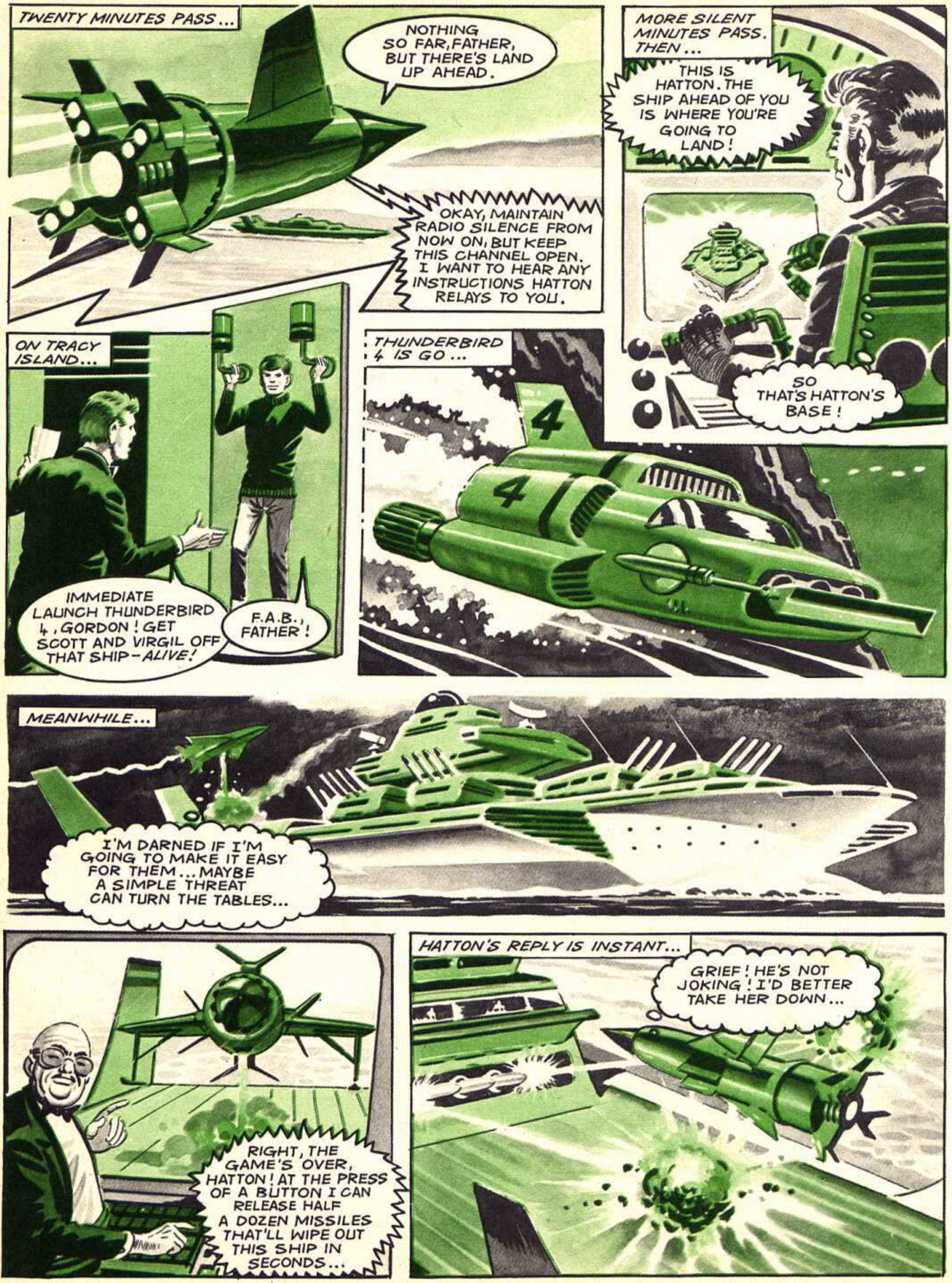
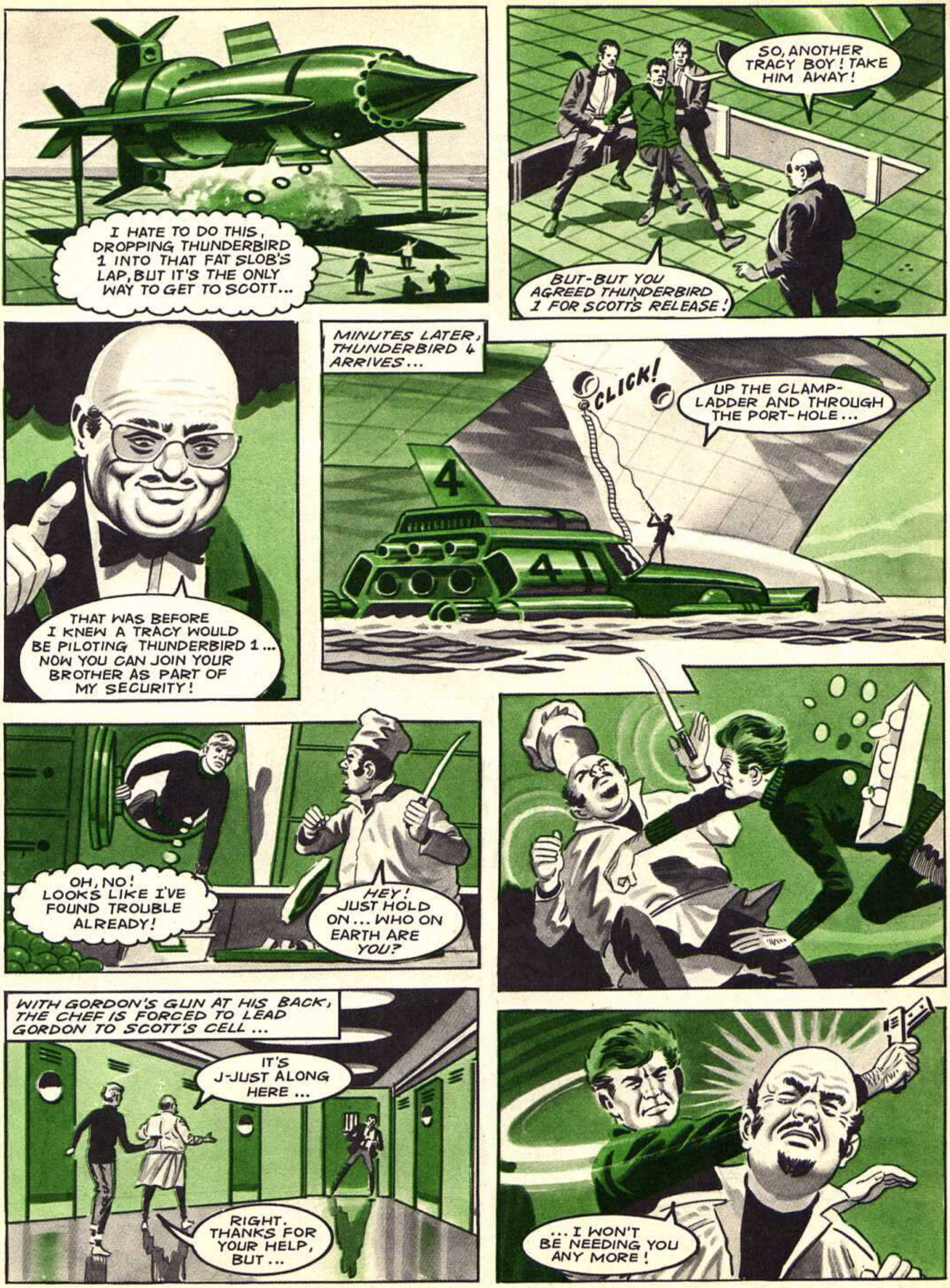
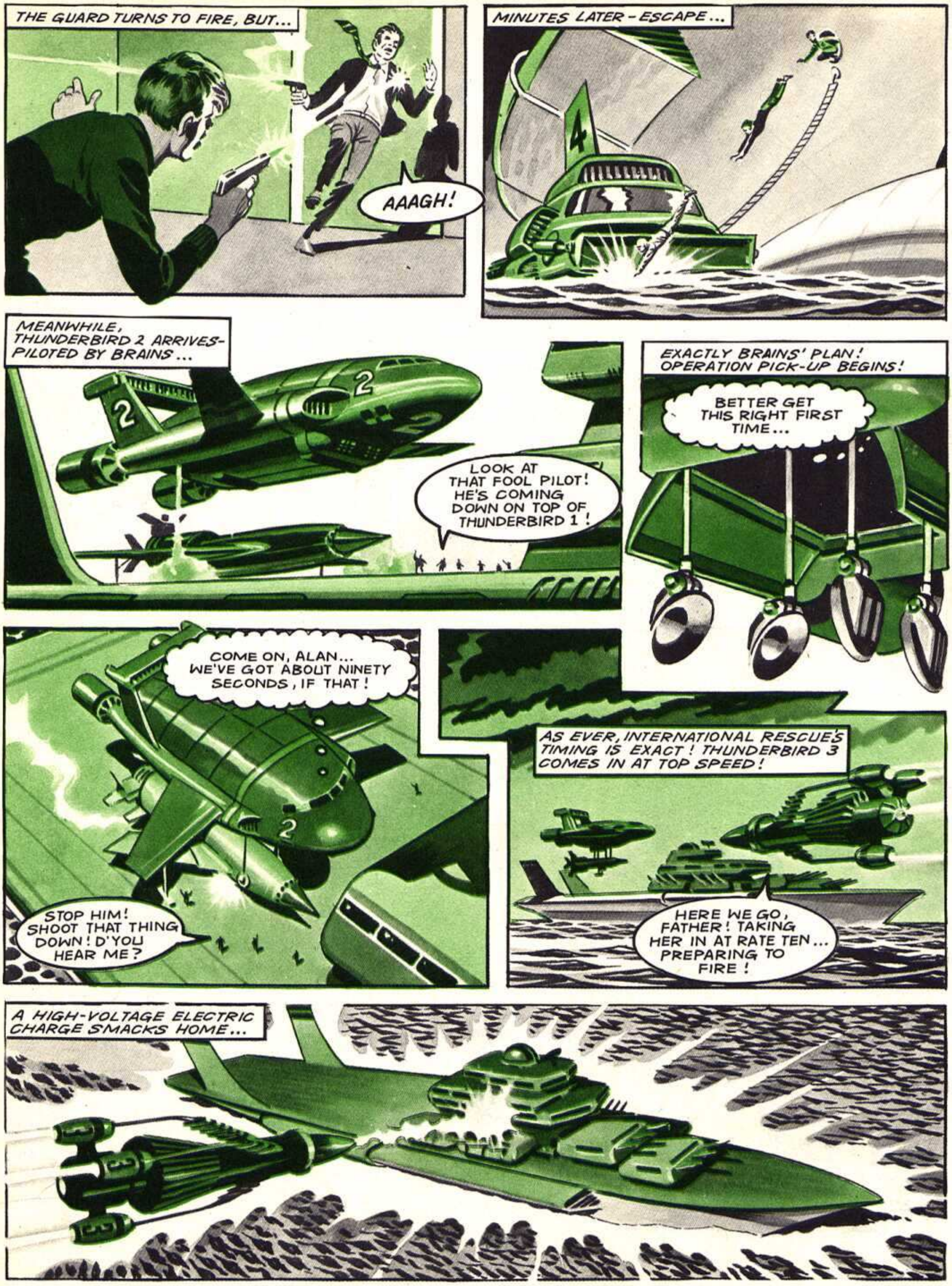
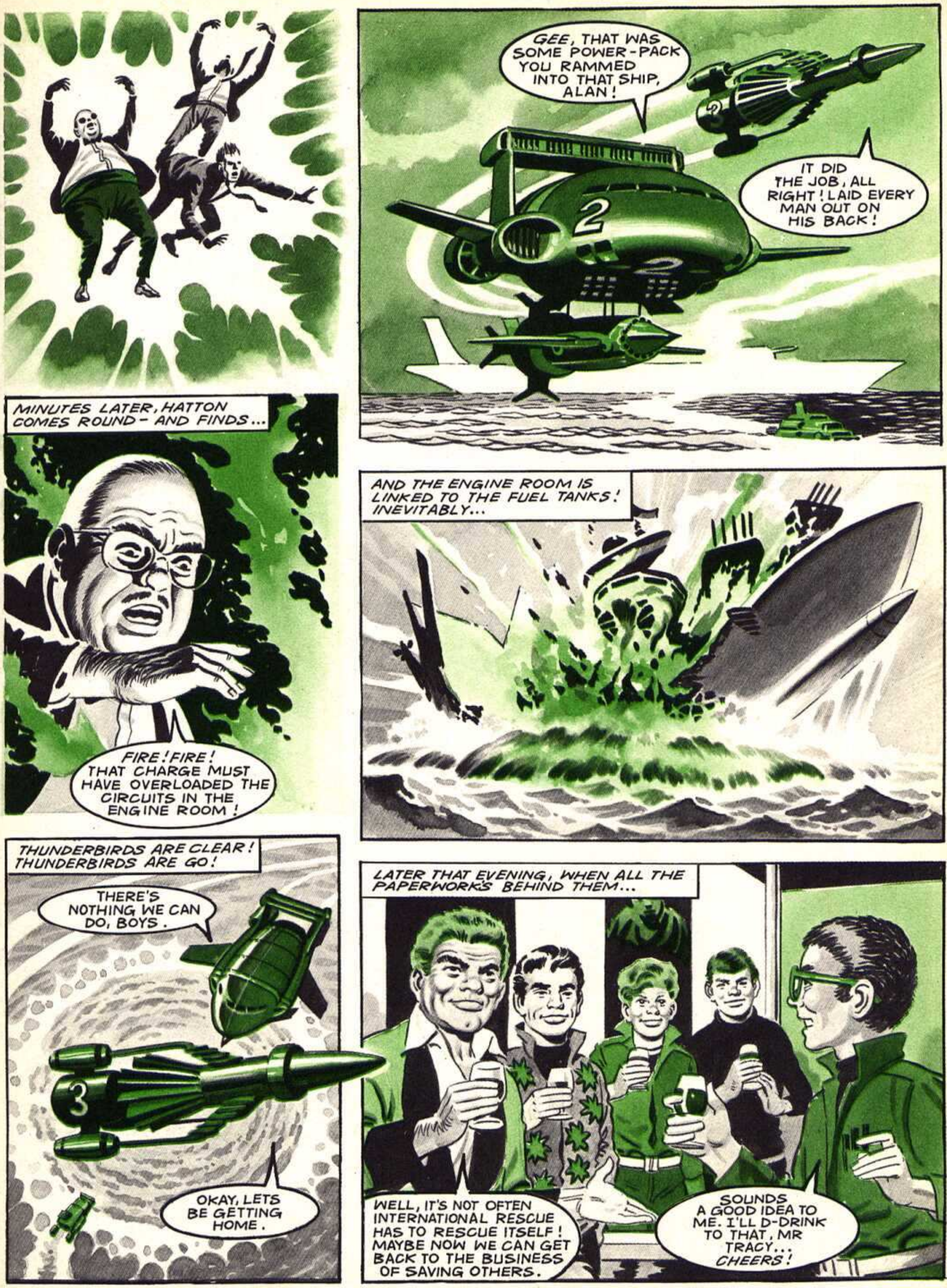

UGH!
OVER TWO HOURS PASS BEFORE JEFF COMES ROUND, AND THEN...
I WANT THE THUNDERBIRD CRAFT! I'M GOING TO SWAP YOU YOUR BOY SCOTT FOR THUNDERBIRDS ONE, TWO, THREE AND FOUR. REASONABLE?
YOU MUST BE MAD!
HOW DO I KNOW YOU'RE HOLDING MY SON? YOU COULD BE BLUFFING!
COULD BE, BUT...
IF YOU WANT TO SAVE HIS NECK, GET THE FOUR THUNDERBIRDS FOR ME!
HATTON MOVES TOWARDS A DOOR, AND IN THE ADJOINING 'ROOM'...
I COLLECT THAT SORT OF THING, AS YOU CAN SEE. I CALL THIS MY 'TRANSPORT EXTRAORDINARY MUSEUM'!
I GET IT, HATTON. SAY NO MORE...
GOOD, I'LL RETURN YOU TO YOUR PLANE. EXPECT TO HEAR FROM ME TWELVE HOURS FROM NOW.
HATTON SNAPS HIS FINGERS, AND HIS MEN APPEAR...
HISSSS!
UGH! UGH!
SORRY, BUT THIS IS ESSENTIAL, TRACY. I'M SURE YOU UNDERSTAND...


... AND AN HOUR LATER...
TOUCHING DOWN IN THREE MINUTES, BRAINS. GET THE BOYS TOGETHER...
GEE, MR TRACY, WHERE'VE YOU BEEN?
JEFF RELATES THE NIGHT'S EVENTS. THEN— DEBATE...
THIS HATTON GUY SOUNDS LIKE A CASE! WHAT D'YOU THINK, BRAINS!
THE IMPORTANT THING IS NOT *WHY* HE COLLECTS THESE CRAFT- BUT THE FACT THAT HE DOES. WHATEVER ELSE MR HATTON IS, HE'S A CRIMINAL. A MASTER THIEF!
AGREED, BUT WE CAN'T HAND OVER THE THUNDERBIRDS— AND WE CAN'T LET SCOTT DIE! BUT WE DON'T KNOW WHERE HATTON'S BASE IS!
FIND OUT WHERE THEY'RE HOLDING SCOTT, THEN SEE WHICH WAY THE WIND BLOWS! RIGHT, I'LL NEED YOU ALL ON STANDBY!
THE TWELVE HOURS COME TO AN END, AND...
TRACY, THIS IS HATTON! STEP OUTSIDE SO I CAN TALK TO YOU.
AN HOUR LATER...
I EXPECT DELIVERY OF THUNDERBIRD 1 WITHIN THE NEXT TWO HOURS. THE PILOT WILL FLY ON BEARING 39-ZERO BY 18.6. HE WILL KEEP A RADIO CHANNEL OPEN FOR FURTHER INSTRUCTIONS!
THUNDERBIRD


TWENTY MINUTES PASS...
NOTHING SO FAR, FATHER, BUT THERE'S LAND UP AHEAD.
OKAY, MAINTAIN RADIO SILENCE FROM NOW ON, BUT KEEP THIS CHANNEL OPEN. I WANT TO HEAR ANY INSTRUCTIONS HATTON RELAYS TO YOU.
MORE SILENT MINUTES PASS. THEN...
THIS IS HATTON. THE SHIP AHEAD OF YOU IS WHERE YOU'RE GOING TO LAND!
SO THAT'S HATTON'S BASE!
ON TRACY ISLAND...
IMMEDIATE LAUNCH THUNDERBIRD 4, GORDON! GET SCOTT AND VIRGIL OFF THAT SHIP-ALIVE!
F.A.B., FATHER!
THUNDERBIRD 4 IS GO...
4
4
MEANWHILE...
I'M DARNED IF I'M GOING TO MAKE IT EASY FOR THEM... MAYBE A SIMPLE THREAT CAN TURN THE TABLES...
RIGHT, THE GAME'S OVER, HATTON! AT THE PRESS OF A BUTTON I CAN RELEASE HALF A DOZEN MISSILES THAT'LL WIPE OUT THIS SHIP IN SECONDS...
HATTON'S REPLY IS INSTANT...
GRIEF! HE'S NOT JOKING! I'D BETTER TAKE HER DOWN...


I HATE TO DO THIS, DROPPING THUNDERBIRD 1 INTO THAT FAT SLOB'S LAP, BUT IT'S THE ONLY WAY TO GET TO SCOTT...
SO, ANOTHER TRACY BOY! TAKE HIM AWAY!
BUT-BUT YOU AGREED THUNDERBIRD 1 FOR SCOTT'S RELEASE!
THAT WAS BEFORE I KNEW A TRACY WOULD BE PILOTING THUNDERBIRD 1... NOW YOU CAN JOIN YOUR BROTHER AS PART OF MY SECURITY!
MINUTES LATER, THUNDERBIRD 4 ARRIVES...
CLICK!
UP THE CLAMP-LADDER AND THROUGH THE PORT-HOLE...
4
4
OH, NO! LOOKS LIKE I'VE FOUND TROUBLE ALREADY!
HEY! JUST HOLD ON... WHO ON EARTH ARE YOU?
WITH GORDON'S GUN AT HIS BACK, THE CHEF IS FORCED TO LEAD GORDON TO SCOTT'S CELL...
IT'S J-JUST ALONG HERE...
RIGHT. THANKS FOR YOUR HELP, BUT...
... I WON'T BE NEEDING YOU ANY MORE!

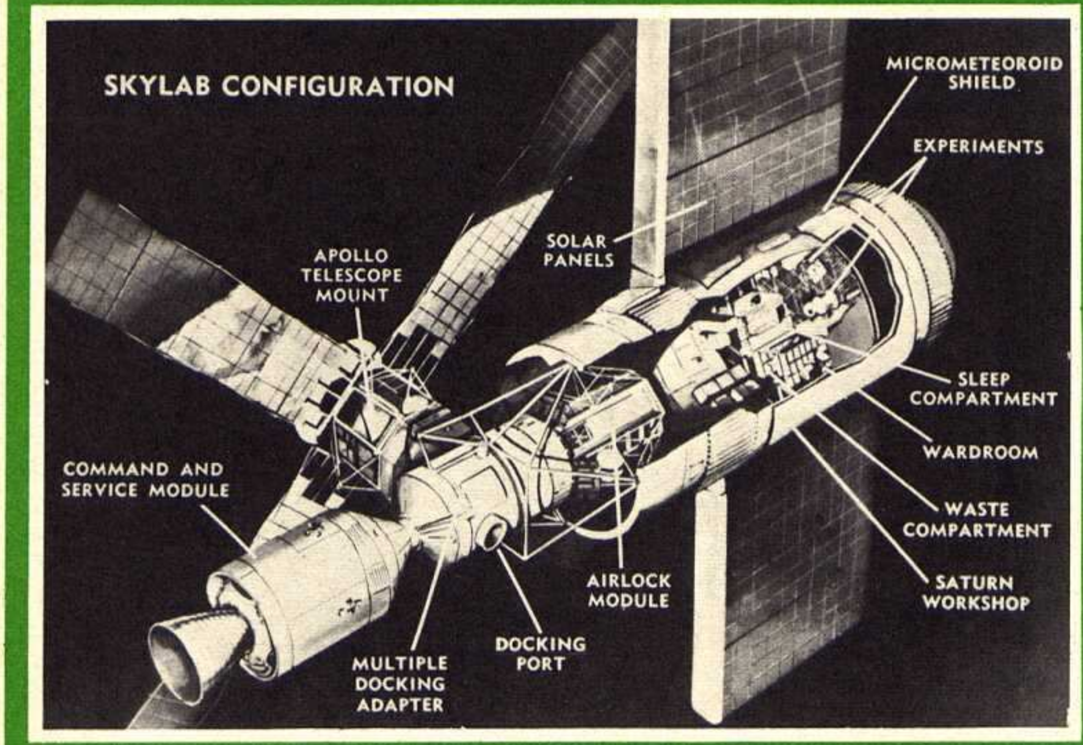

THE GUARD TURNS TO FIRE, BUT...
AAAGH!
MINUTES LATER - ESCAPE...
4
MEANWHILE, THUNDERBIRD 2 ARRIVES- PILOTED BY BRAINS...
2
LOOK AT THAT FOOL PILOT! HE'S COMING DOWN ON TOP OF THUNDERBIRD 1!
EXACTLY BRAINS' PLAN! OPERATION PICK-UP BEGINS!
BETTER GET THIS RIGHT FIRST TIME...
COME ON, ALAN... WE'VE GOT ABOUT NINETY SECONDS, IF THAT!
STOP HIM! SHOOT THAT THING DOWN! D'YOU HEAR ME?
AS EVER, INTERNATIONAL RESCUE'S TIMING IS EXACT! THUNDERBIRD 3 COMES IN AT TOP SPEED!
HERE WE GO, FATHER! TAKING HER IN AT RATE TEN... PREPARING TO FIRE!
A HIGH-VOLTAGE ELECTRIC CHARGE SMACKS HOME...


GEE, THAT WAS SOME POWER-PACK YOU RAMMED INTO THAT SHIP, ALAN!
IT DID THE JOB, ALL RIGHT! LAID EVERY MAN OUT ON HIS BACK!
MINUTES LATER, HATTON COMES ROUND - AND FINDS...
FIRE! FIRE! THAT CHARGE MUST HAVE OVERLOADED THE CIRCUITS IN THE ENGINE ROOM!
AND THE ENGINE ROOM IS LINKED TO THE FUEL TANKS! INEVITABLY...
THUNDERBIRDS ARE CLEAR! THUNDERBIRDS ARE GO!
THERE'S NOTHING WE CAN DO, BOYS.
OKAY, LETS BE GETTING HOME.
LATER THAT EVENING, WHEN ALL THE PAPERWORK'S BEHIND THEM...
WELL, IT'S NOT OFTEN INTERNATIONAL RESCUE HAS TO RESCUE ITSELF! MAYBE NOW WE CAN GET BACK TO THE BUSINESS OF SAVING OTHERS.
SOUNDS A GOOD IDEA TO ME. I'LL D-DRINK TO THAT, MR TRACY... CHEERS!

THINK TANK

Orbiting Workshop

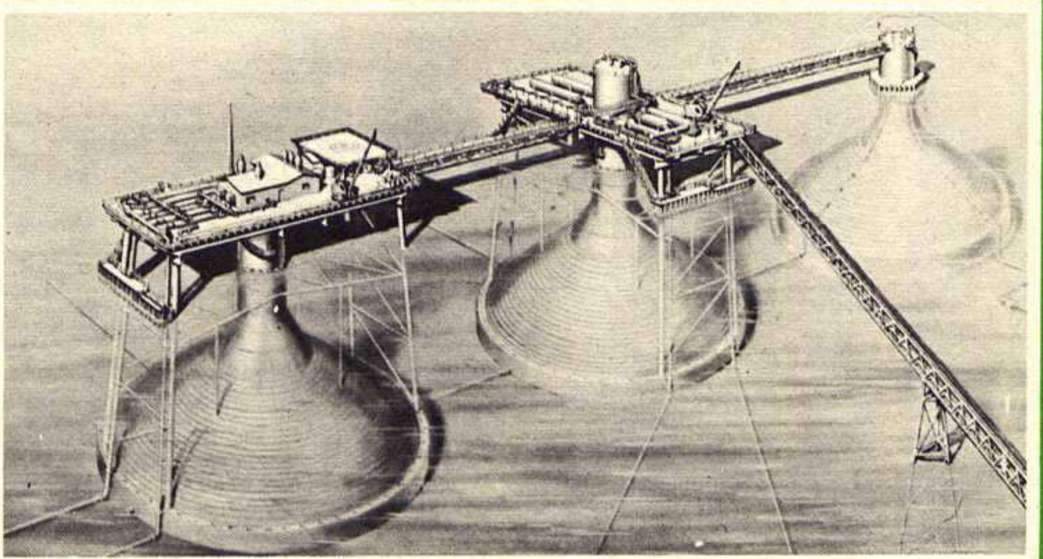
A crew of three astronauts are scheduled to rocket up to this orbiting workshop from Cape Kennedy, Florida, in 1972. Skylab is the third stage of a Saturn rocket, and the astronauts will live and work in it for 28 days, before re-entering their command module and returning home via splashdown in the Atlantic.


SKYLAB CONFIGURATION
MICROMETEOROID SHIELD
EXPERIMENTS
SOLAR PANELS
APOLLO TELESCOPE MOUNT
SLEEP COMPARTMENT
WARDROOM
COMMAND AND SERVICE MODULE
WASTE COMPARTMENT
AIRLOCK MODULE
SATURN WORKSHOP
DOCKING PORT
MULTIPLE DOCKING ADAPTER

During the eight months that the workshop will remain in orbit 330 miles above the Earth, it will be used for three missions. The first will test the crew's physiological reactions; the second will examine the sun through a special telescope on board; on the third, data will be collected for use in earth sciences.

About 10 hours a day will be spent in work, after which the men can relax. The workshop is the largest cylinder in the diagram, and derives its power from huge wing-like solar panels.

Storing Oil



Looking like giant inverted funnels, these unique oil-storage tanks being built off the coast of the Trucial State of Dubai will each hold half a million barrels of crude oil.

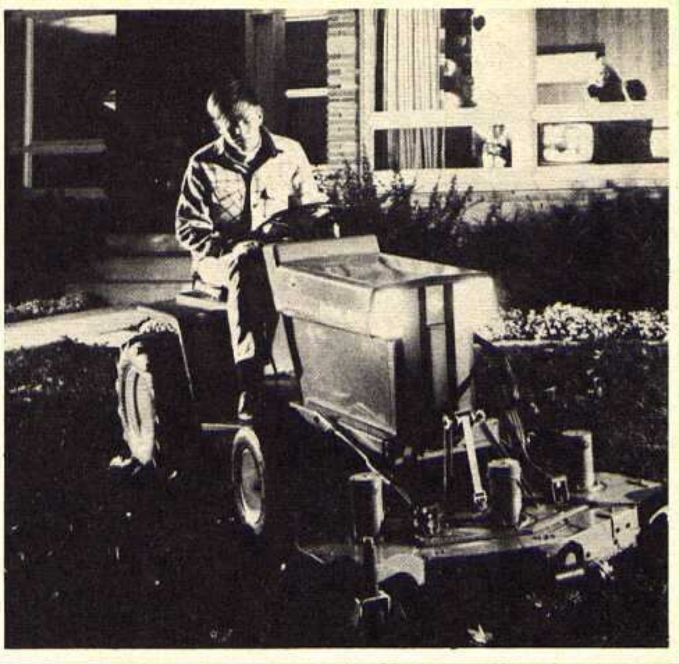
The first of the three tanks (on the right) was built in 1969 and won a top award for engineering design. The other two are more advanced versions. After being constructed on shore, the tanks will be floated out to sea, then submerged and anchored 158 ft. deep on the floor of the Gulf.

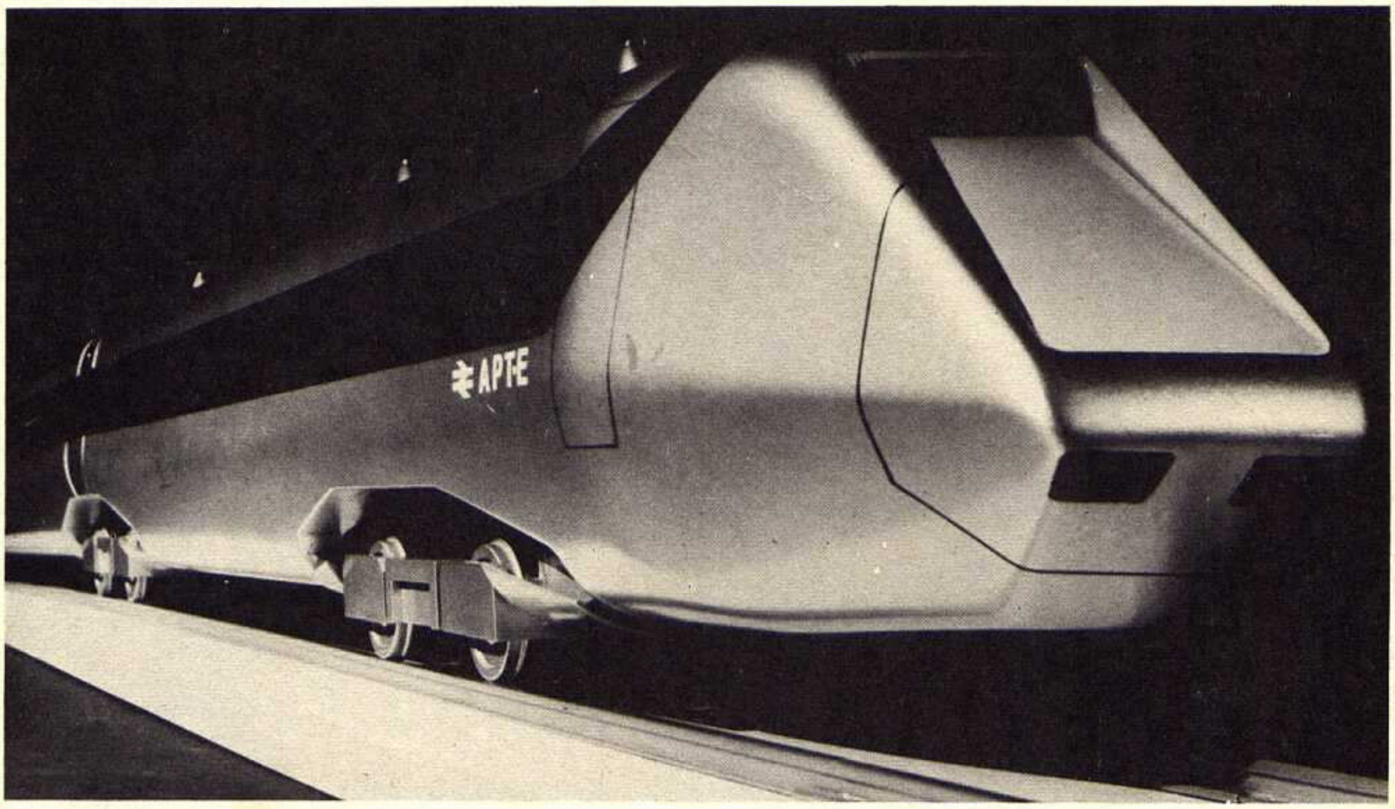
As storms in this area can produce 40 ft. waves and 100 m.p.h. winds, this undersea storage and ship-loading complex has been designed to withstand the very worst of Nature's buffetings.

Whispering Lawn Mower

Here's a lawn mower that can be used even at night without disturbing the neighbours – it's an Elec-Trac, or electric tractor, that has a 36-volt power pack system consisting of six long-life batteries. Quiet and compact, the mower cuts the grass before it is pushed down or rolled over by the machine. The cuttings are blown backwards underneath the tractor, where they are collected by a sweeper.

Besides mowing lawns in the summer, the machine comes in useful in the winter for blowing snow away. The manufacturers, General Electric Company, make the following remarkable claim for the power pack. They claim that if the tractor is used on average three times a week, the power pack should have 8 to 10 years of life.



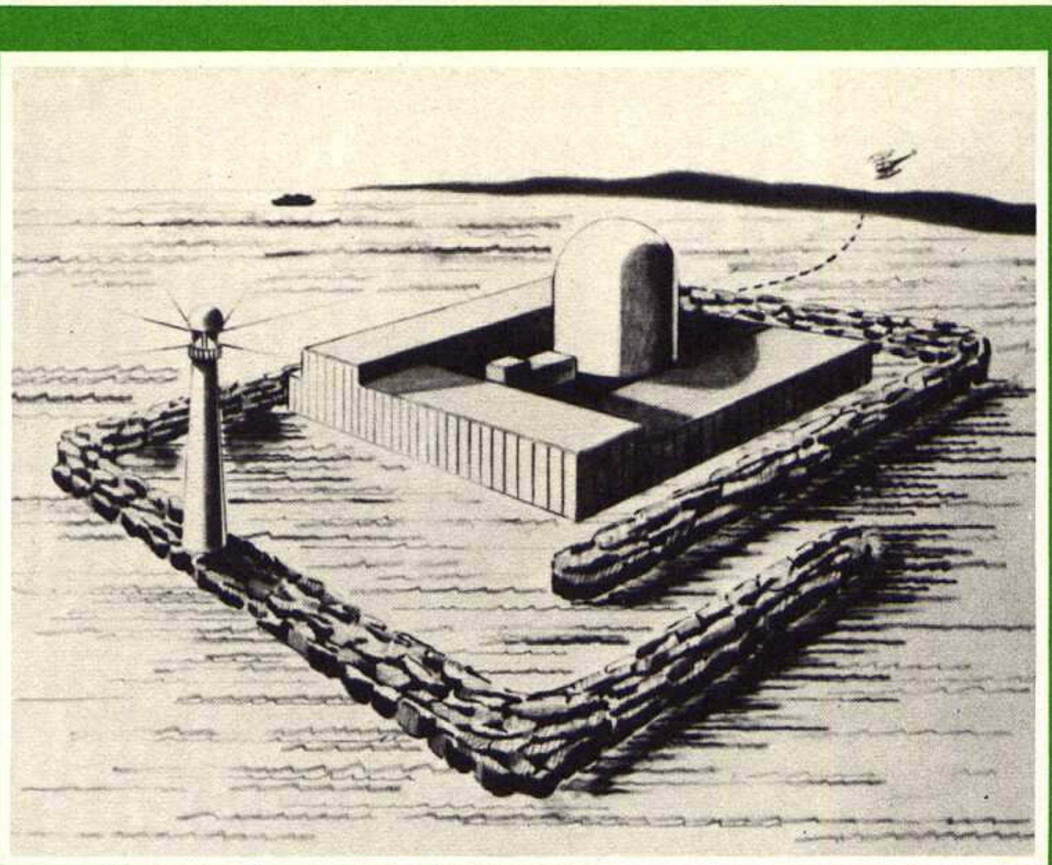


British Super Train

This is a model of British Rail's futuristic new Queen of the Track. It's called the Advanced Passenger Train (APT) and it is scheduled to come into service in the mid-Seventies at an estimated speed of 150 m.p.h. on existing track and 186 m.p.h. on prepared track.

There will be one of these aerodynamically styled power cars at each end of the train, so that the train does not have to be turned around or wait for another loco to pull it out of the station. Each will be powered by eight enormous Leyland gas-turbine engines running on Diesel fuel. On electrified lines electric engines will be used. Passengers will enjoy much greater comfort as the suspension of the APT carriage has been designed to allow a tilt of as much as nine degrees, so that the train can travel smoothly at much higher speeds on curves. No more lurching along corridors or spilled tea!

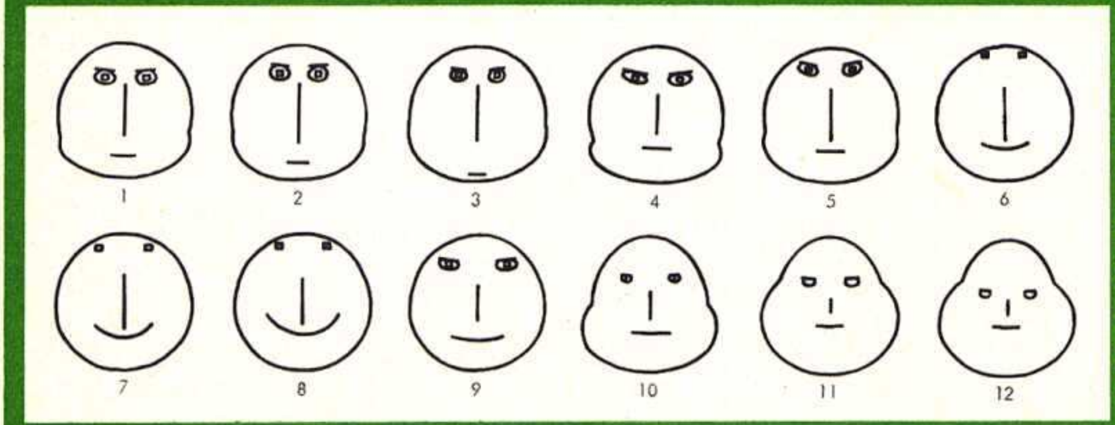
Floating Energy Park



As the world's reserves of coal, oil and gas are not unlimited, and are being used up at an increasing rate, scientists have come to the conclusion that reserves of fuel for nuclear power, mostly in the form of uranium ore, could provide more energy than all known reserves of fossil fuels together.

One scientist predicted that giant 'energy parks', with several large breeder reactors grouped together to produce more fuel than they use, would be developed, along with fuel reprocessing plants. Some would be on land, but many would be located offshore, where they could use the sea for cooling purposes. After being fabricated by assembly-line methods, they would be towed out to sea on huge barges and anchored into place.

One great advantage of the offshore 'energy park' is that, as large cities continue to grow, they must increasingly depend upon energy sources which use the sea for cooling, in order to prevent 'heat island' effects that could influence climate and weather patterns. The productivity and usefulness of the sea would thus be immeasurably increased.



Facing the Facts

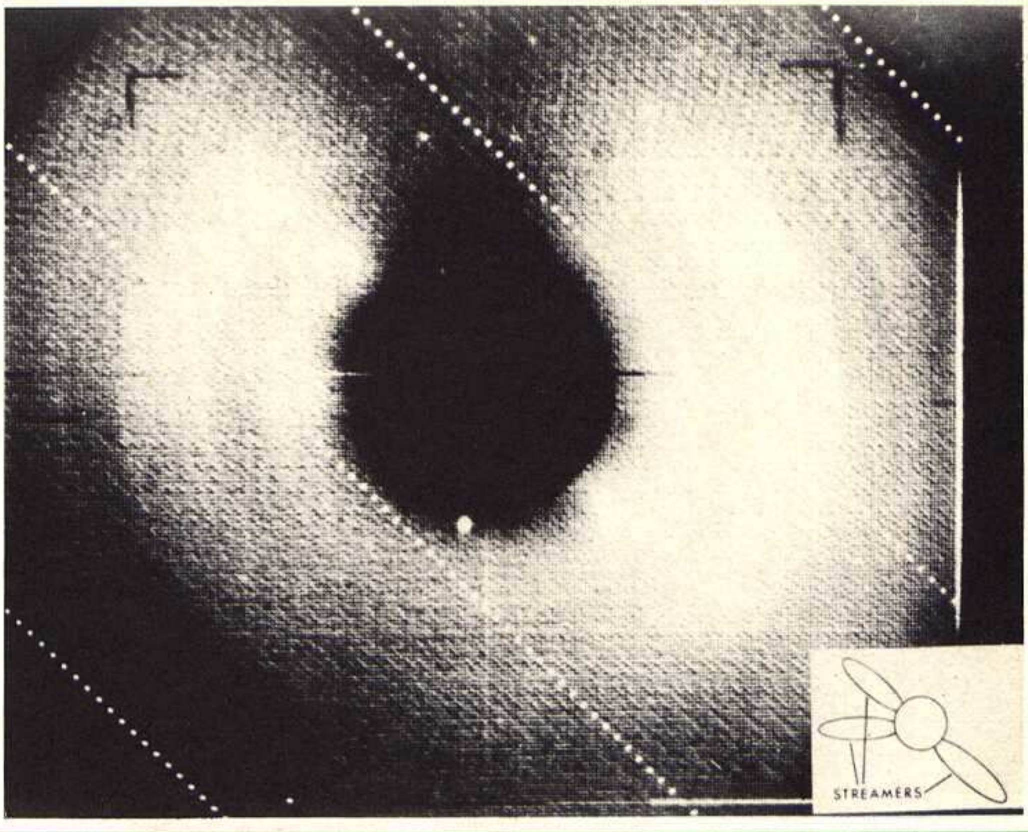
These funny faces were actually drawn by a computer. The idea behind them, devised by Professor Herman Chernoff of Stanford University, is that because faces are easier to recognise than masses of figures, similarities and groupings in the data fed into a digital computer quickly become apparent in the facial peculiarities. On the other hand, rows of numbers are likely to confuse.

These faces represent the mineral analysis data from a 4,500-ft. core drilled from a Colorado mountain side. Every 100 ft. of this core was analysed for its mineral content. The samples were represented by a row of 12 percentage numbers which were fed into the computer – one number to represent the upper half outline of the face, another the lower half, a third the size of the mouth, another the mouth curve, and so on.

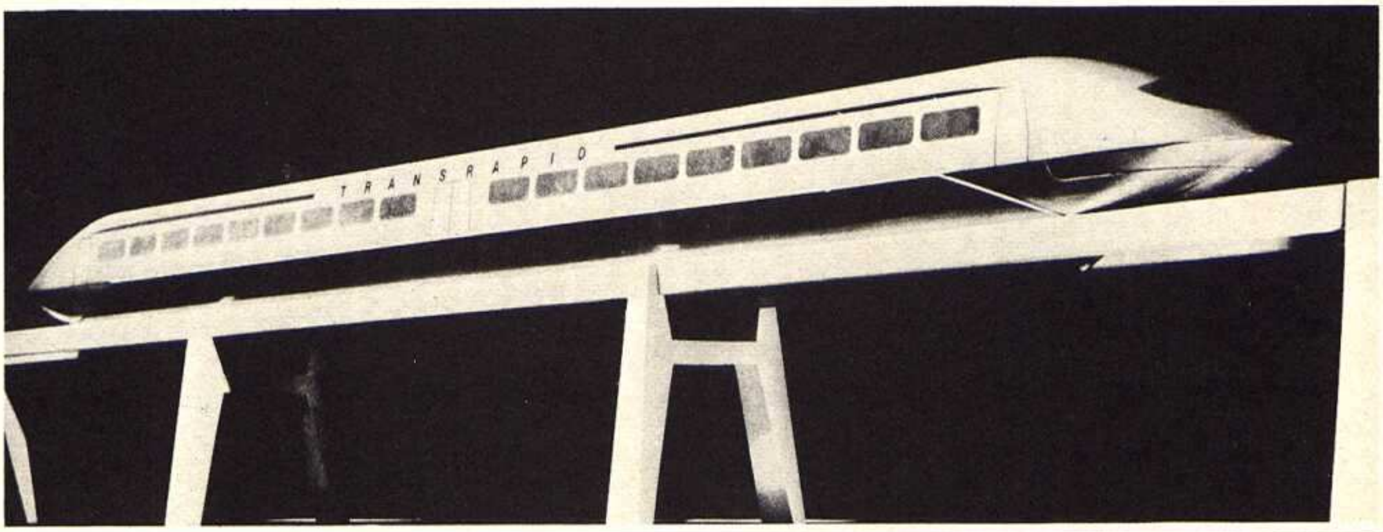
Where the core divides into three major zones of mineral content is illustrated by the drastic changes beginning in faces 6 and 10. Professor Chernoff said that while this could be learned by studying the data carefully, the computer faces quickly told him where the major changes occur.

Artificial Sun Eclipse

This is the first ever spacecraft view of corona streamers, which sometimes extend for five million miles from the sun's surface. The corona is normally only visible during an eclipse, so America's Orbiting Solar Observatory, known as OSO–7, had to create its own artificial eclipse of the sun. It did this by means of a spinning disc mounted on an extended boom in front of the observatory. This disc, showing up as the black circle in the centre of the picture, allowed the white light of the corona to be photographed.



The diagram at the lower right shows how scientists have interpreted the streamers. From the centre of the disc to the edge of the photograph is about four million miles.



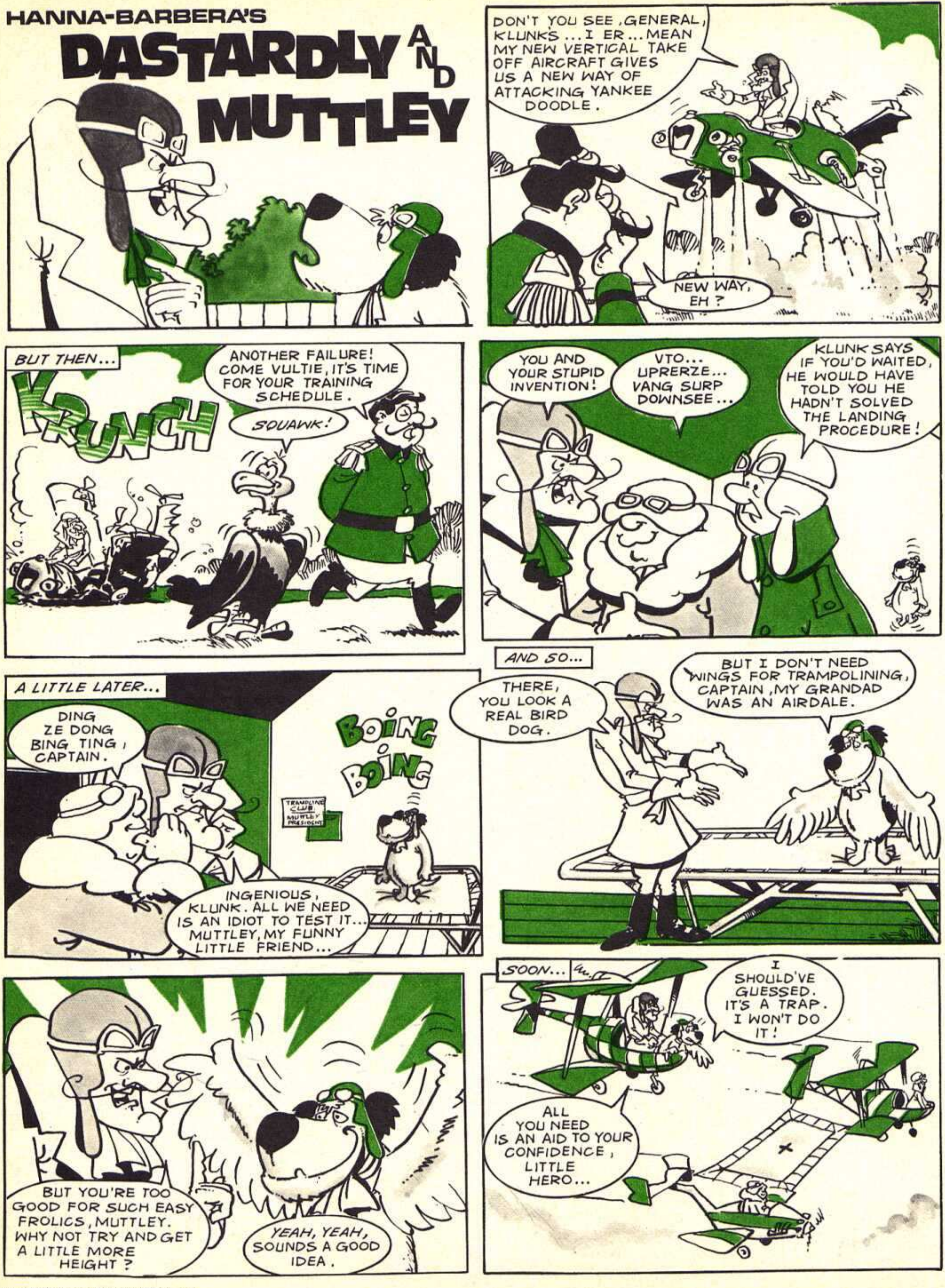
Magnetic Hovertrain

Germany is experimenting with a hovertrain that is suspended clear of the track by means of electromagnets, instead of the conventional air cushion.

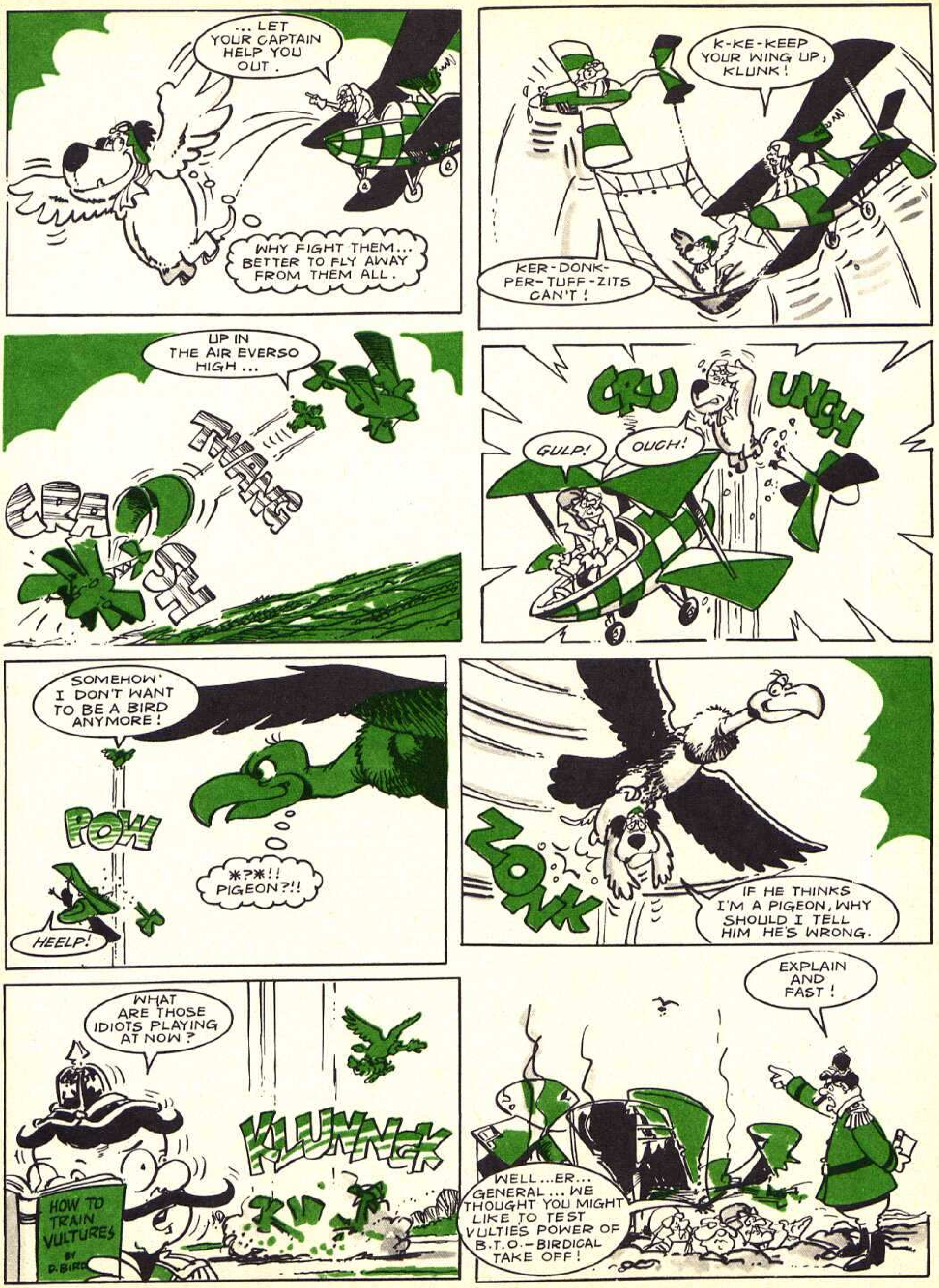
A model has been designed which is propelled by a linear induction motor. The magnets at the overhanging sides of the model lift the train clear of the track, so that it hovers without actually touching the track.

The linear induction motor consists of two halves. One half is the vertical metal fin fixed above the track. The driver in his cab controls the electrical power of the other half – magnetic coils which repel the vertical fin in order to drive the train forward. Other magnets in the overhanging sides maintain the magnetic levitation and stability of the train.

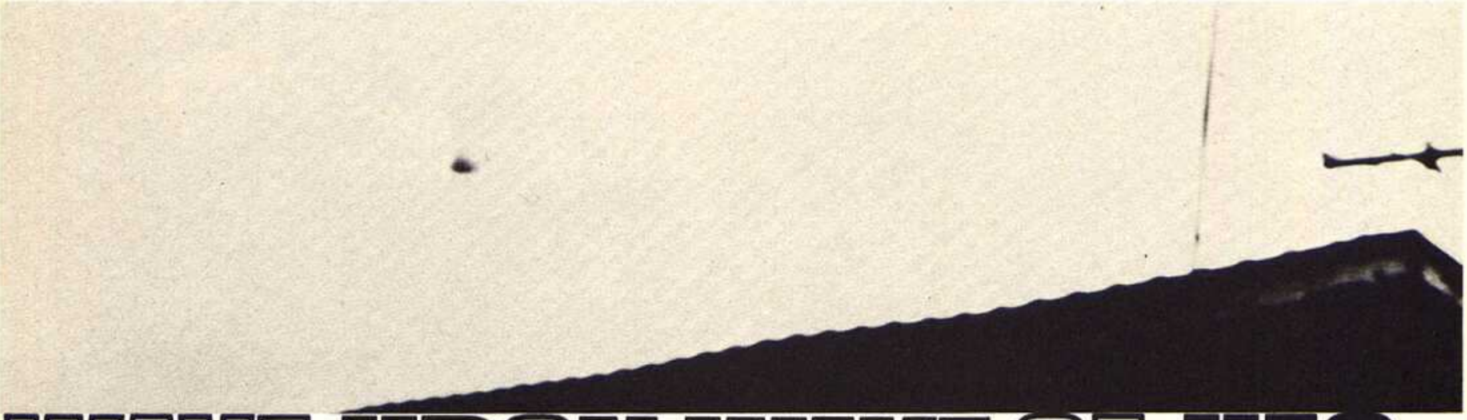
At a later stage the German engineers plan to test an air-cushion hovertrain and compare its performance with the magnetic hovertrain, to see which kind is most suitable for high-speed travel on the European railways of the future.


HANNA-BARBERA'S
DASTARDLY AND MUTTLEY
DON'T YOU SEE, GENERAL, KLUNK'S ... I ER ... MEAN MY NEW VERTICAL TAKE OFF AIRCRAFT GIVES US A NEW WAY OF ATTACKING YANKEE DOODLE.
NEW WAY, EH?
BUT THEN...
KRUNCH
ANOTHER FAILURE! COME VULTIE, IT'S TIME FOR YOUR TRAINING SCHEDULE.
SQUAWK!
YOU AND YOUR STUPID INVENTION!
VTO... UPRERZE... VANG SURP DOWNSEE...
KLUNK SAYS IF YOU'D WAITED, HE WOULD HAVE TOLD YOU HE HADN'T SOLVED THE LANDING PROCEDURE!
A LITTLE LATER...
DING ZE DONG BING TING, CAPTAIN.
BOING BOING
TRAMPOLINE CLUB MUTTLEY PRESIDENT
INGENIOUS, KLUNK. ALL WE NEED IS AN IDIOT TO TEST IT... MUTTLEY, MY FUNNY LITTLE FRIEND...
AND SO...
THERE, YOU LOOK A REAL BIRD DOG.
BUT I DON'T NEED WINGS FOR TRAMPOLINING, CAPTAIN, MY GRANDAD WAS AN AIRDALE.
BUT YOU'RE TOO GOOD FOR SUCH EASY FROLICS, MUTTLEY. WHY NOT TRY AND GET A LITTLE MORE HEIGHT?
YEAH, YEAH, SOUNDS A GOOD IDEA.
SOON...
I SHOULD'VE GUESSED. IT'S A TRAP. I WON'T DO IT!
ALL YOU NEED IS AN AID TO YOUR CONFIDENCE, LITTLE HERO...

© 1972 Hanna-Barbera Prod. Inc.

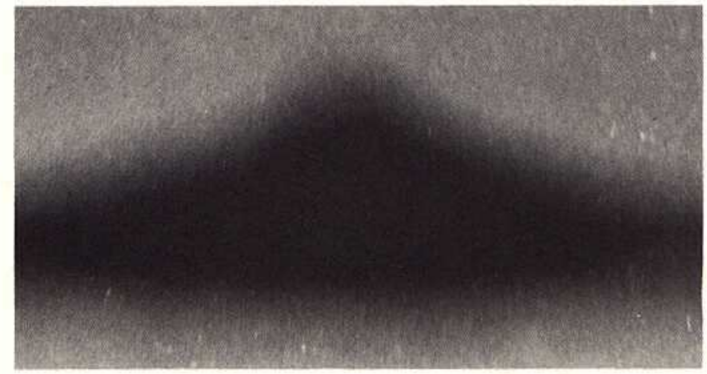

... LET YOUR CAPTAIN HELP YOU OUT.
WHY FIGHT THEM... BETTER TO FLY AWAY FROM THEM ALL.
K-KE-KEEP YOUR WING UP, KLUNK!
KER-DONK-PER-TUFF-ZITS CAN'T!
UP IN THE AIR EVERSO HIGH...
THWANG
CRA
SH
CRU
UNCH
GULP!
OUCH!
SOMEHOW I DON'T WANT TO BE A BIRD ANYMORE!
POW
?!! PIGEON?!!
HEELP!
ZONK
IF HE THINKS I'M A PIGEON, WHY SHOULD I TELL HIM HE'S WRONG.
WHAT ARE THOSE IDIOTS PLAYING AT NOW?
HOW TO TRAIN VULTURES BY D. BIRD
KLUNNNCK
KU
EXPLAIN AND FAST!
WELL...ER... GENERAL... WE THOUGHT YOU MIGHT LIKE TO TEST VULTIES POWER OF B.T.O.-BIRDICAL TAKE OFF!

WAVE UPON WAVE OF UFOs



The work of collecting and studying thousands of reports of strange unidentified flying objects (UFOs) has been carried on as carefully and completely as possible by a small band of amateur researchers for at least twenty years. These dedicated people are interested in a phenomenon which includes many reports of objects which, while seen from the ground (or from the air) have been tracked at the same time on radar, and have been seen to *deliberately* avoid fighter planes sent up to investigate them. I stress the point that this is not just hearsay, and that cases like this are described in the report of the U.S. Air Force's investigatory commission under Dr Edward U. Condon. Note that they remain unexplained, and that one of the most sensational among them occurred over England's East Anglia. While there is something of compelling scientific interest in reports of that kind, people who *should* be interested only shrug their shoulders or laugh.

So the amateurs are left to carry on to the best of their ability and, thank goodness, that ability is considerable. One of the best-known among them, Dr Jacques Vallée, has compiled fully computerised catalogues of the various classes of reports. From these, it has been possible to gain knowledge of patterns of behaviours of UFOs, and immediately apparent is the fact that there are pronounced cycles, or *waves*, of reported UFO activity. Reports commence to trickle in from a region, then increase in volume until they rise to the crest of the wave and gradually fall away. A quiet spell follows, then another wave billows up elsewhere.



(Above) A blow-up of D. J. Esplin's Lancashire UFO taken in 1967. (Top) The Spanish visitor that appeared as a ball of fire.

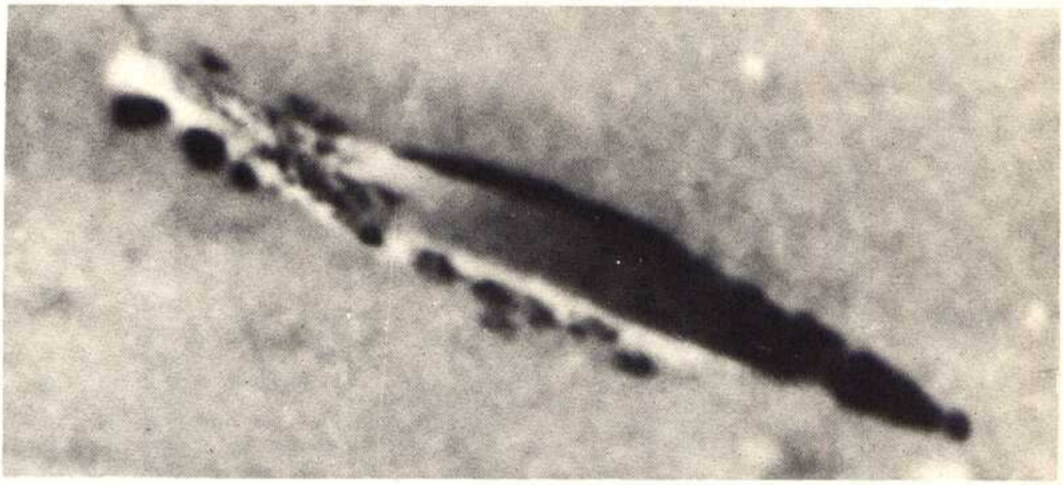
Modern publicity for UFOs began with the original 'flying saucer' wave of 1947, and the most famous report of the period was that of Kenneth Arnold, an American businessman and private flyer from Boise, Idaho.

On June 24, 1947, Arnold took off from Chehalis in the State of Washington, to help in a search for a C–46 transport plane which had crashed in the Cascade Mountains. It was a bright, sunny afternoon as the plane ranged among the towering peaks. Suddenly there was an unexpected flash of light and Arnold looked around him in surprise. Another flash, and this time he located the source: nine glistening objects travelling along in formation – two rows – one of five, the other of four. Eight of the objects were disc-shaped, the other appeared to be more crescent-shaped, and that one was the leader. They were moving in an undulating flight path close to the line of peaks, and were heading towards Mount Rainier. Arnold watched them closely, and, impressed by their speed, timed them as they passed between the peaks of Mount Rainier and Mount Adams, a distance of 45 miles. A quick calculation showed that their speed was close to 1300 m.p.h., which was much quicker than any planes at that time!

After he had landed, Kenneth Arnold told reporters that the undulating motion of the objects was like that of "saucers being skipped over water." Newspaper reporters were not slow in making eye-catching headlines out of that – the unfortunate name 'flying saucer' was born and has lived on ever since!

There were scores of other reports in 1947, but that year's wave was not the first by any means. A year earlier there had been the much-publicised 'ghost-rocket' scare over Sweden. 'Mystery airships' ranged silently over England and Wales in 1909, weird lights hovered over chapels and hillsides in Wales in 1905, and hundreds of science-fiction styled craft invaded the Mid-West American skies in 1897.

One of the most bizarre of these waves plagued blizzard-bound Scandinavia in the bitter winter of 1933–34. On that occasion the UFOs appeared in the shapes of flimsy old stringbag biplanes, and usually 'flew' in weather when no other pilot would dare venture forth. The range and performance of aircraft in those days was very limited, but these mystery biplanes must have had a remarkable capability for nobody knew whence they came or where they went! They arrived as from nowhere, flew around for hours, performed breathtaking manoeuvres at the height of blizzards, and then disappeared.



(Above) An enlargement of the strange object taken by accident on an aerial photo.

(Left) Did this jet bomber have a shadow?

STRANGE REPORTS

Since 1947 there have been a number of UFO waves: 1948, 1952, 1954, 1957–58, 1958–59 in New Guinea, 1962-63 in South America, 1964 in U.S.A., 1965 worldwide, 1966, 1967 in United Kingdom, 1968–69 in South America, 1970 in Scandinavia, and 1971 in Brazil. Perhaps the most staggering wave was that which occurred in North-Western Europe, largely in France, in 1954. There were literally *thousands* of reports. My friend Aimé Michel, who has made a special study of this period, tells me that he is still uncovering hitherto unknown cases 17 years later! There were 'flyovers' of UFOs of all manner of shapes and sizes: there were giant cloud-cigars disgorging small glowing discs, there were near landings, landings and creature or humanoid reports – some of them quite alarming.

Typical of the cases of this period were the events at Poncey-sur-L'Ignon in the Côte-d'Or. On October 2, 1954 a farmer's wife was milking cows, when the dogs ran out in the direction of nearby woods, barking furiously. The lady, Mme. Guainet, then noticed that the house was bathed in an unusual light, and her reaction was that "the Moon looks peculiar this evening." She looked up, and to her surprise saw a huge, vertical cigar-like object moving silently eastwards, roughly at the speed of an aeroplane! She called to her husband, who came out of the house, as did a neighbour. All three watched the giant UFO disappear beyond a hill. Many other villagers also saw the same sight.

Again at Poncey, two days later, there was a remarkable story of a bizarre 'landing' of a UFO. The incident was reported to the police by the mayor of the village, M. Anatole Cazet.

At 8.0 p.m., M. Fourneret and other villagers were at the mayor's house when they were called to M. Fourneret's house. Mme. Yvette Fourneret had a strange tale to tell. As it was dark she had gone to the window to close the shutters. Glancing out she had seen a thing that alarmed her greatly – a glowing object was swaying lightly in the air a short distance away in M. Cazet's meadow. It looked as though it was preparing to land. It appeared to be about three metres in diameter, was elongated horizontally, and was of an orange hue. Its light illuminated the branches and leaves of a nearby plum tree.

Seized with fright, Mme. Fourneret grabbed her little boy and ran with him to a neighbour's house, where they shut themselves in. Two men arrived on the scene, and hearing the ladies' distress, armed themselves with shotguns and ran down to the meadow. The UFO had gone, but they found a tell-tale mark.

The 'mark' – a hole – was left untouched, as official investigators found later. Over an area 5 feet long, 2 feet wide at one end and 18 inches at the other, the earth had been 'sucked up', and white worms were wriggling on the fresh soil of this hole. Much of the soil that had come from the hole was scattered all around it. The lower part of the hole was wider than at ground level, and clods of earth were hanging down from the rim. Everywhere inside the hole the roots were intact: they had not been cut, as they would have been had some joker cut the hole with a spade. In the centre of the hole lay a plant with the end of the tap root still in the ground at the bottom, and all its side roots exposed and undamaged. It was as though the soil had been sucked out by a giant vacuum cleaner. The villagers were still gathered around the hole on the evening of October 4, when a young villager, Francois Bouiller, joined them. He had no idea of what had happened, but before anyone could tell him, explained excitedly that he had seen a luminous green object like an aeroplane without wings climbing away towards the south-east. The police found that several other people had seen a wingless craft rising from Poncey-sur-L'Ignon at about 8.0 that evening. Cases such as these are typical of those which go to make up a wave of UFO reports. Space is limited, so we cannot look at other waves in this feature, but readers may rest assured that they have been well-covered elsewhere – like the 1958–59 New Guinea wave, and the Spanish wave of 1968, which are the subjects of a *Flying Saucer Review* special issue, *UFOs in Two Worlds*.

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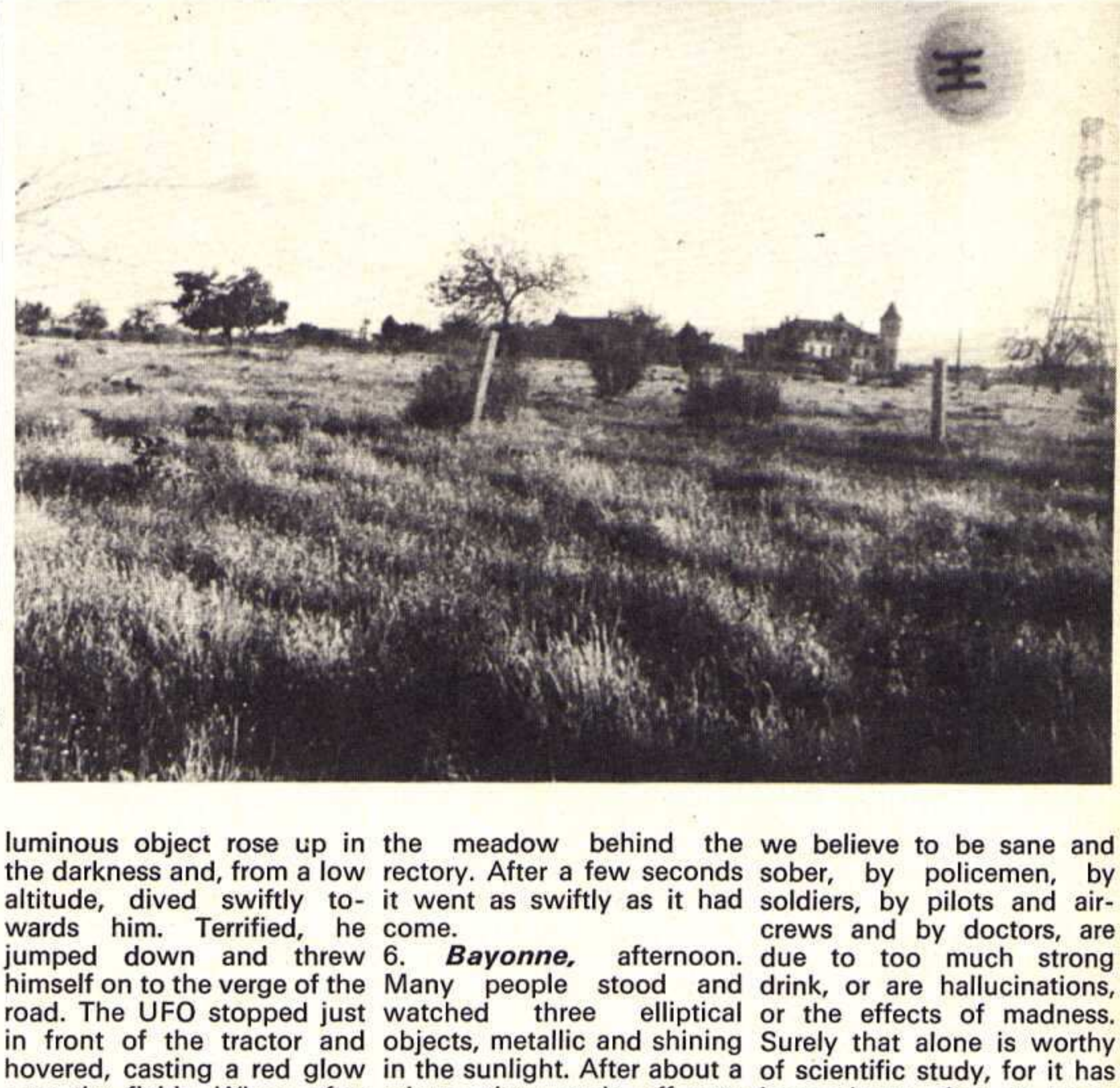


(Right) Mr. P'an CH'en-Hsiang's shot of an early morning visitor.

To close, let us return to an important feature of the great 1954 wave. When the mass of reports were studied on a day by day basis, there were several separate days when groups of reports were found to have come from places which fall on straight lines across the map of France (and adjoining countries). The most interesting of these is the first one which Aimé Michel discovered. He called it the Bayonne-Vichy Line: it is now known as the BAVIC line*, and it all happened on September 24th.

The reports (greatly condensed) which go to make up BAVIC are as follows:

1. ***Vichy,*** afternoon. At a practice football match, players and spectators saw a cigar-like object which crossed the sky at a great speed. It was completely silent.

2. ***Gelles,*** early night. Another cigar-shaped UFO was seen by several witnesses as it passed swiftly and silently across the sky.

3. ***Ussel,*** about 11 p.m. A farmer was driving a tractor back to his farm when a luminous object rose up in the darkness and, from a low altitude, dived swiftly towards him. Terrified, he jumped down and threw himself on to the verge of the road. The UFO stopped just in front of the tractor and hovered, casting a red glow over the fields. When, after a few minutes, the UFO again moved towards the tractor, the farmer leapt up and ran off across the field. However, he cast glances over his shoulder, and saw the thing pass beyond the tractor, and only stopped running when he realised it was gaining altitude. To his relief, it flew off and disappeared in the distance. The red, glowing UFO was seen by two others from a distance.

4. ***Tulle,*** also about 11 p.m. A draftsman saw a luminous reddish object moving rapidly and silently in the sky. He had his binoculars with him, and saw it change colour three times, from red to white and then to green.

5. ***Lencouacq,*** at nightfall. A villager saw a luminous object arrive in silence, and hover just above the grass of the meadow behind the rectory. After a few seconds it went as swiftly as it had come.

6. ***Bayonne,*** afternoon. Many people stood and watched three elliptical objects, metallic and shining in the sunlight. After about a minute they made off very swiftly.

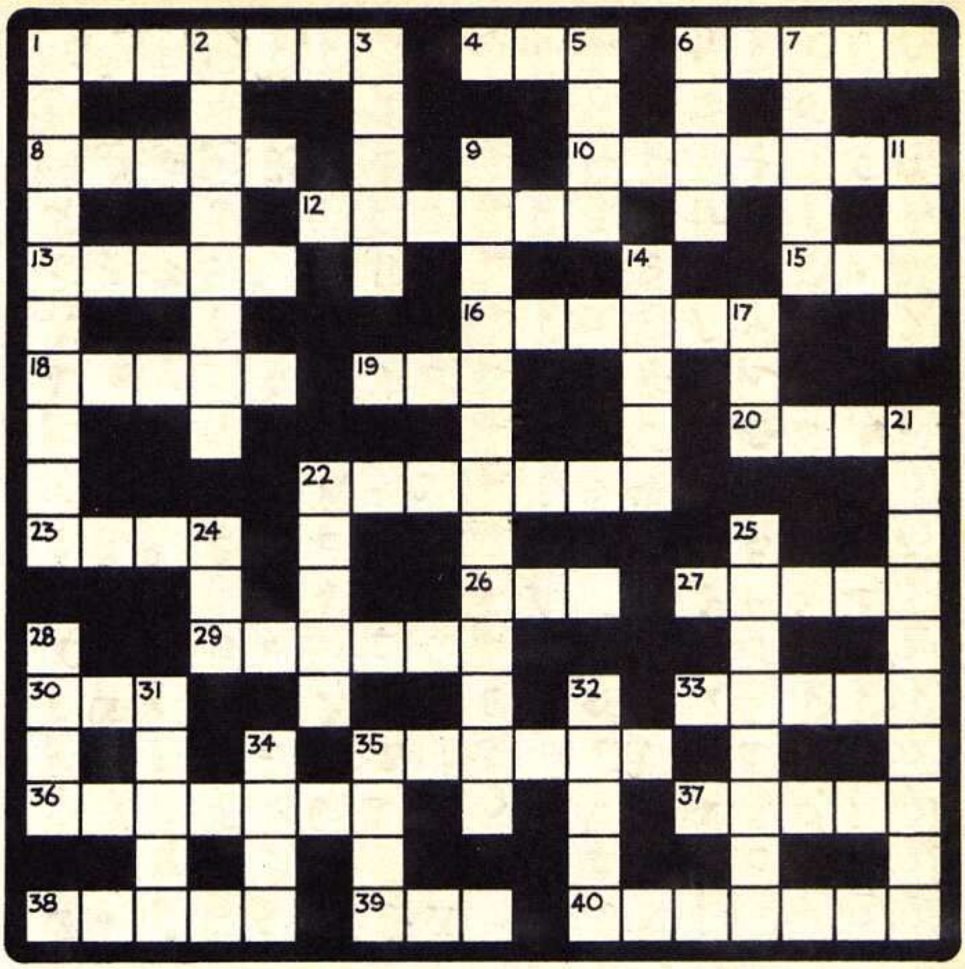
These cases were reported widely in the press.

Six in a row! On other days there were several five-point lines as well, while the first of the Poncey-sur-L'Ignon incidents was the anchor for a six-point line on October 2nd. One would think that the existence of such remarkable alignments would be of scientific interest.

However, there have been many who have scoffed at the idea that UFOs are *real* objects, and insist that it is all a matter of drunkenness, or hallucinations, or madness. Let us suppose for a moment that we *are* wrong and that there are no UFOs, or alien aeroforms, invading our atmosphere. Let us suppose that these things reported by so many ordinary folk whom we believe to be sane and sober, by policemen, by soldiers, by pilots and aircrews and by doctors, are due to too much strong drink, or are hallucinations, or the effects of madness. Surely that alone is worthy of scientific study, for it has been shown that on many occasions such bouts of 'drunkenness', 'madness' or 'hallucinations', occur along straight lines on a map!

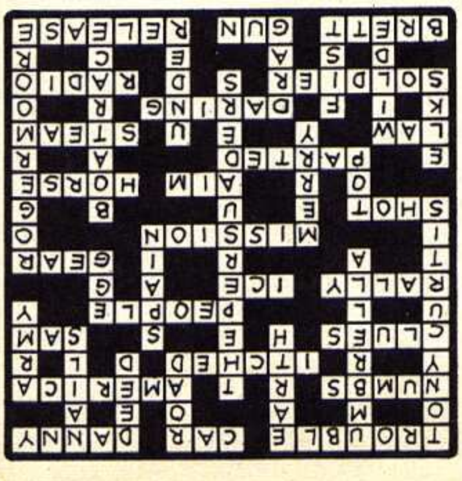
**The 1954 wave, and the orthotenic lines, are described in detail in Aimé Michel's book* Flying Saucers and the Straight Line Mystery *(translated from Mystérieux Objects Célestes), Criterion Press, New York, 1958.*

Persuaders Crossword



Clues Across

1. Both Brett and Danny are used to meeting this (7)
4. Danny's is an Italian model (3)
6. He's a Wilde man (5)
8. What rope does to your limbs if you're tied up for a long time (5)
10. Land of the free (7)
12. What many a trigger finger has done when a Persuader stands in front of the gun (6)
13. You need to solve them for the answers (5)
15. Danny might refer to his country as Uncle this (3)
16. The Persuaders protect all sorts of . . . . . ., when they're in trouble (6)
18. Both Brett and Danny would be out to win if they entered this car competition (5)
19. In their various adventures 'The Persuaders' have skated on some pretty thin this (3)
20. Danny and Brett are both pretty snappy when using this, whether in car or wardrobe (4)
22. Mr. Wilde and Lord Sinclair have performed many a one for Judge Fulton (7)
23. When people fire guns at them, 'The Persuaders' try very hard to avoid getting this (4)
26. If Danny and Brett avoid getting 23 across, it means this wasn't very good (3)
27. Danny would have seen one at a rodeo (5)
29. If Brett and Danny were this, there wouldn't be any 'Persuaders' (6)
30. Judge Fulton bends this to bring villains to justice (3)
33. When persuaded to handle another case, Danny and Brett often let off this (5)
35. Neither Mr. Wilde or Lord Sinclair lack this (6)
36. At Sandhurst Brett learnt to be this (7)
37. One would expect 'The Persuaders' to use VHF perhaps (5)
38. A Christian name for a Lord (5)
39. Brett and Danny would find one very handy occasionally. 23 and 26 across give you extra clues (3)
40. 'The Persuaders' have often made this possible for victims held against their will (7)



Clues Down

1. He plays a pretty Wilde character (4, 6)
2. One would expect to find Brett's neatly rolled, if it wasn't raining (8)
3. As a person Danny is much more down to this, than his aristocratic buddy (5)
5. You need a pretty fast one if you're driving a Ferrari or an Aston Martin (4)
6. 'The Persuaders' do many a good one and they're mostly dangerous too (4)
7. Brett and Danny could both be described as being as hard as these (5)
9. The greatest all-action series on television? (3, 10)
11. When Brett was a 36 across he was obviously in this (4)
14. Many a mission has led them to this country of sunshine and bullfighting. (5)
17. One would expect to find Lord Sinclair eating this with a silver spoon perhaps (3)
21. He's no saint now (5, 5)
22. 'The Persuaders' could be described as being as cheerful as Robin Hood's men (5)
24. At Ascot, Brett would undoubtedly wear this hat (3)
25. As a University Blue, Brett took part in this? (4, 4)
28. Large deer found in Danny's home country (4)
31. Danny's surname sounds as if he originated in the West (5)
32. Often Danny and Brett may feel they're . . . . . the Judge's thumb. (5)
34. Often used by 'The Persuaders' in preference to a gun (4)
35. This sort of racing might be more popular with Danny (4)

"By Person, or Persons Unknown!"

All that Brett Sinclair saw – as he was to say later, many times, to persistent policemen – was a flash of yellow out of the corner of one half-closed eye. All he heard was a strangled gasp – half horror, half indignation – from Danny Wilde, which was drowned out by the tortured howl of a car engine pushed above its limits.

For Brett was half asleep, slumped in the bucket seat of the Ferrari which Danny was driving north up the M1 with a total disregard for that speed limit.

Danny, of course, had been wide awake. He had seen, in his rear-view mirror, a yellow car coming up behind him.

The yellow Ford screamed past the Ferrari, its engine protesting and threatening to burst apart with the strain put on it. Once past, it cut sharply across the Ferrari's front, into the middle lane. Danny's foot twitched over the brake pedal, but the Ford did not stay immediately in front of him for more than a second. It swung sharply into the inside lane. And on the inside lane was a third car, travelling at a steady speed, that Danny had been about to overtake.

It was all over inside four seconds. Swinging from the outside to the inner lane, cutting across Danny's front, the yellow Ford smashed solidly into the side of the third car. Locked together in a bright-edged tangle of rending metal, the Ford and its victim slid over the hard shoulder, poised for a moment at the top of the steep banking at the motorway's edge, and then toppled out of sight. By the time Danny had brought the sliding Ferrari to a halt, long tongues of flame and a spreading pall of oily smoke were rising from the spot where the two cars had vanished. Brett, his seat-belt released, was out of the Ferrari and running for the road's edge.

Brett began to scramble down the banking, turning to jerk out to a shaken Danny: "Emergency telephone . . . along there! Call ambulance . . . police . . . I'll see if anyone was thrown clear!"

Within minutes of Danny's call, the motorway was filled with the sound of clanging sirens.

"I understand you two gentlemen witnessed the crash, sir?" The policeman had seen too many people die in needless crashes in his days as a motorway patrolman to be at all shaken by the accident.

"I saw very little, Officer – I was almost asleep at the time. My friend . . . Mister Wilde . . . was driving. He stopped immediately, of course – but there was nothing we could do."

"Quite so, sir. Now, Mister Wilde . . . will you tell me exactly what you saw? If you'd like a little time to recover from the shock . . ."

"I'm okay, I guess – but I reckon it's you that's gonna get the shock! Sure gave me one when that old yellow Ford came blastin' past me. Movin' like a bat out o' . . ."

"The car that caused the accident was a yellow Ford, sir? Did you by any chance notice the licence number – I daresay we can reconstruct it from what's left . . . but it might make things simpler . . . ?"

"I only saw one thing – an' that kinda stopped me from noticin' anything else! Y'see, that yellow Ford – it was empty! There wasn't any driver!"

The county coroner took a sip from the glass of water, leaned forward, adjusted his spectacles, glanced round the court to make sure that everyone was paying due attention, and began his final address to the jury.

"You are here, as you know, to decide the cause of death of Sir Bartley Kincaid, formerly Lord-Lieutenant of this County. You have heard how, on the fourteenth of this month, he was driving north along the M1 motorway in his car, proceeding at a speed well within the legal limit on the inner lane. You have heard also, that another car, its ownership as yet untraced by the police, appeared deliberately to crash into Sir Bartley's vehicle, forcing it from the road.

"I hardly need tell you that the evidence you have heard in this court from Mister Daniel Wilde . . ." – the coroner's eye flicked over to where Danny and Brett sat in the front row of seats provided for witnesses and public (Danny fidgeted uneasily under its cold glance) – ". . . should not in any way affect your decision. Mister Wilde has admitted that he was travelling at a speed far above that permitted by law, and I can only think that the blind eye he admits turning on the speed limits . . ." – there was a low chuckle from those who had been encouraged by newspaper reports to attend the inquest – ". . . was turned also upon the car that had somewhat unexpectedly overtaken him. Cars do not travel the highways of England without drivers – whatever they may do in the United States of America!"

The jury retired but returned within minutes. "We find that the death of Sir Bartley Kincaid was caused by the criminal negligence, in driving dangerously, of some person, or persons, unknown."

A mob of reporters greeted Danny and Brett outside the

court. "What comment, Mister Wilde?"; "Anything to say about the phantom driver?"

"Blazes, let's get outa here!" Danny began to shoulder his way roughly through the eager crowd, followed by Brett. "I c'n just see those headlines tomorrow: 'CORONER RAPS OIL TYCOON', 'MILLIONAIRE SEES INVISIBLE MAN' . . . eeeeyukk!"

Danny grunted as a uniformed man saluted him. "Here it is – I guess it's my summons f'r speedin'.

"Danny, if you can't tell the difference between a policeman's uniform and that of a chauffeur – maybe you *should* be wearing glasses!" Brett moved forward to meet the breathless chauffeur.

"Begging your pardon, Lord Sinclair – and yours, Mister Wilde – but my lady asks if you'll be kind enough to take tea with her up at the Hall?"

"And your lady is . . .?" Although Brett was sure he knew already.

"Lady Kincaid – Sir Bartley's widow!"

"Oh, but I do believe you, Mister Wilde!" Lady Kincaid's voice was firm, her faded blue eyes flashed angrily across the silver teapot and plates of scones.

"You see, Sir Bartley and I have a very dear friend – and when he saw the silly stories the papers were printing about you, he telephoned me to say that if you saw something . . . or rather, if you *didn't* see it . . . then you were certainly correct!"

"The Judge!" Brett and Danny spoke together. Lady Kincaid leaned forward in her chair. "I see you know who I mean! Very well – he went on to say that if I was sure that Sir Bartley was murdered . . . then you two gentlemen were the best men he knew to bring the villain to justice! And, of course, my husband *was* murdered – and I know by whom!

. . . . . .

"Look – we can't just walk in on this feller an' say: we know you killed Sir Bartley, we know why you did it – now just tell us *how* you did it, before we hand you over to the cops! All we got to go on is the word of one old lady . . . an' I reckon she's pretty shook up . . ."

Brett kept his eyes fixed firmly ahead as he steered the Aston Martin along the narrow, twisting country lane. "We lose nothing by going to see him, Danny. He sounds an unpleasant character, and he had a motive for wanting Sir Bartley out of the way. . . ."

"A couple o' fields! Is that any reason to knock someone off?"

"Two fields that he needed . . . because unless he owned them he could not get permission to build an estate of houses. A project that could make him as rich . . . as rich as you! And Sir Bartley wouldn't sell.

"So he hires an invisible man to drive Sir Bartley off the road? Heck, if I wasn't so sure that car *was* empty . . .!"

Taking no notice of Danny's interruption, Brett went on: "But, of course, he didn't do it just for revenge. It can't have been hard for him to find out exactly what Sir Bartley's financial situation was. To find out that, if Sir Bartley died, most of the estate would need to be sold to pay off death duties. Including the two fields he *must* have – which he'd be able to buy at last."

"Okay – so he had a good motive. Maybe you'll tell me how he did it? That stretch of motorway was dead straight, I watched that yellow car in the mirror for half-a-mile – an' if there'd been a driver who jumped out before the crash, I'd have seen him! I reckon. . . ."

But Brett had stopped listening. He had stopped the Aston Martin by the grassy verge and was leaning from the window, staring at the sky. A few yards from the car, a short driveway led from the road to a large and ornate wrought-iron gate. On the gate, a highly-polished brass plate announced: POPLARS. On a smaller brass plate, set into the gatepost like the plate one sees outside a doctor's surgery, Danny could just make out the words: GEO. BASSETT, BUILDER.

"Hey, Brett, we're here! This is Bassett's house! Brett . . . what are you lookin' at? Wake up . . . this is Bassett's place . . .!"

Brett seemed to come back to earth with a jerk. With a poker-face, he leaned back in his seat so that Danny had a clear view of what had interested him so much. Opposite Bassett's house lay a wide meadow, running down to a river. A stout, new fence of wire and timber closed the meadow off from the road, with a single gate directly opposite Bassett's driveway. A large notice beside the gate read: GEO. BASSETT, PLANT HIRE. In the meadow, the surface of which had been churned to mud by the passing and repassing of heavy trucks, stood a serried line of huge, tarpaulin-covered objects – obviously the 'plant', the construction industry's name for its tools, its bulldozers, excavators, scrapers and dump trucks.

But it was not at these mute monsters that Brett was looking. In a clear space in the meadow of mud stood a man. Slung around his neck was what appeared, at that distance, to be a transistor radio. And above his head circled a small red object, from which came an angry snarl. Brett gave Danny time for a good long look, and then spoke quietly and firmly.

"Yes, this is Bassett's house. And that's Bassett's meadow, with Bassett's construction plant in it. And I'll bet you a pony to a penny that that's

Bassett himself. And if you still want to know how he killed Sir Bartley, look what he's doing!"

Bassett had left the meadow and returned to his house, without giving more than a passing glance to the gleaming Aston Martin that had parked near his driveway for a few minutes and then driven on.

From the hiding place of a strategically placed ditch farther along the country road, two pairs of eyes watched the construction man carefully close his wrought iron gate.

"I know it was me saw that empty car – but I still ain't sure it's possible!"

Brett was already scrambling from the ditch. "Radio-controlled vehicles are used at research laboratories to test the effects of crashes. So long as he could keep it in view, a man with experience of radio-control could easily steer a car along a motorway – and make it swerve into another vehicle whenever he liked."

". . . and he figured that one driver who claimed to have seen a driverless car would just be laughed out o' court – like I was! It all hangs together, Brett – but I sure as hell would hate to have to prove it."

Brett stretched down a long arm to haul Danny from the ditch. "But we can find proof, Danny! There was a kind of workshop off to one side of that meadow . . . let's do a little breaking and entering. Come on!"

It was easy enough to clamber through the wire fence surrounding the meadow. Easy enough to pick a way through the parked vehicles, massive and silent under their tarpaulins, to the workshop. Easy enough to force the heavy padlock that secured its door. But not so easy to see the pair of hard, cold eyes that watched their movements from an upper window across the way, in Bassett's house!

"I think this is all we need, Danny!" Stripped down vehicle chassis, with servo-motors on transmission and steering linkages. Enough electronic gadgetry to fit out a whole fleet of remote-controlled cars.

"He must have been working along these lines for years. . . ."

". . . an' then found a real good use for his hobby when he needed to put some poor old guy outa the way! An' he really made me look a fool – I'd like to meet this Bassett!"

Brett was already heading for the door of the workshop. "Come on, we're going to . . ." But he didn't finish the sentence. Outside the open door of the workshop, a dark shape was blocking off the light. A huge shape that moved nearer, nearer, with the squelching crunch through the mud of heavy caterpillar tracks. One of the tarpaulin-covered bulldozers had sprung to life – and was bearing down on the workshop like some prehistoric reptile with ponderous, crushing power.

"The window! Out of the window!" Both men were already wrenching at the stiff window-frame when the first blow hit the workshop. The timber-framed building rocked and groaned on its supports.

It was no time for delay. Taking a few steps back, Brett ran, dived, and smashed through the now near-diamond shaped window opening, praying that Danny would follow before the workshop buried him among its wreckage, to be pulped into the ground by the tracks and blade of the bulldozer. Seconds later, Danny was beside him. With a noise like a dozen giant tea-sets being smashed at once, the workshop went down in a mass of shattered timber.

Like a blind, questing beast, the 'dozer backed off from the wreckage. Then, gathering speed, it began to swing towards where Danny and Brett waited like two tiny

matadors before a mighty bull.

"Bassett's been experimenting with radio control on some of his construction plant! He must be watching us from somewhere nearby – and there's no way of knowing which of these vehicles he can control!"

"We better split up! Both head for the river – an' swim for it!" But even as he spoke, Danny realised that more huge, sheeted shapes were blocking the way to the river. Brett's hand on his shoulder swung him round to face towards the road. From the ruined hut, the 'dozer was moving ponderously in.

And from the direction of the road, towering like a child's drawing of a giraffe under its tarpaulin, the lumbering shape of a drag-line excavator, the big, crane-shaped machines that can scoop up a quarter-ton of earth in one swing of the bucket on their single arms, was bearing down. The tarpaulin ripped and split. The heavy metal bucket of the excavator rose in the air, swinging above them. The blade of the 'dozer was only a few feet away. From the river end of the meadow, clanking tracks announced that more machines had sprung into life and were moving in. The ring of steel was closing on the two frail figures of flesh and blood.

Then, the machines stopped.

Outside the ring of vehicles, from the direction of the road, a man had appeared. Slung across his chest was something which resembled nothing more than a piano-accordion – but Brett and Danny realised that this was the control panel with which Bassett, who now held them trapped, could at any moment let loose once more the metal monsters which were now crouched for the kill.

"Well, gentlemen, so you guessed how Sir Bartley – the stubborn old fool – met his end! You think you have proof that will make the police believe your amazing story. Perhaps you have noticed that this meadow slopes quite steeply towards the river . . ."

Brett spoke out of the corner of his mouth, half-shielded from Bassett by the towering excavator. "He's planning to make it look like an accident, Danny! We've got to put those controls out of order – before we're crushed. . . ."

Bassett's voice rang with triumph, ". . . such a pity that you should have trespassed in my field, broken into the workshop. One of the bull-dozers had been badly parked on the slope, left in neutral gear with the brake off. It began to roll away – but the workshop stood directly in its path. They will find what is left of you, mangled among the wreckage. Another unhappy accident!"

A cigarette lighter is a small object, but when it is made of 22-carat gold it is heavy for its size. Thrown with all the force of a muscular arm – of Brett Sinclair's arm – it is a missile capable of doing a good deal of damage to a fragile target. A target as fragile as the maze of circuitry in a thin plastic casing that controls a number of vehicles.

Bassett cursed. His hands dropped to his rank of switches. A number of small blue sparks flickered briefly on the surface of his control box. The engines of the vehicles that encircled Brett and Danny woke to clamorous life. For a long moment – Brett thought he had failed. The 'dozer was moving forward, its blade only inches away.

The massive bucket of the excavator swept down, missing Danny's head by a hair's-breadth, to smash with a dull clang against the cab of the 'dozer. Its engine rising to a grating wail, the 'dozer spun around on a single track to smash into the side of a second excavator.

"They're out of control! Run, Danny, run!" And Brett had broken through the milling ring of machines and was making for the fence. Danny was right on his heels. Bassett, cursing steadily, flung the useless control box from him. His hand went to his pocket, emerged grasping a blue-steel automatic pistol.

"Not an accident after all, then! But you'll be just as dead!" Bassett's voice was thick with hatred as he moved the muzzle of the automatic from one to the other of them as they stood facing him. Brett wondered whether a sudden dive at him might save at least one of them. Danny was engaged on the same calculation. Bassett knew it – and knew they hadn't a hope.

"And perhaps I may escape after all! I am a rich man – and your bodies will not be discovered until my men report for work tomorrow. Yes, I think . . ."

The bucket of an RB 19 drag-line excavator weighs around seven hundredweight. It is made of steel. When it swings through the air at the end of the excavator's arm it is travelling at, say, twenty feet per second. When, in the course of that swing, it hits a human body – the result is not pleasant.

Bassett never knew what death it was that came on him from behind, from where his uncontrolled monsters were churning the ground in blind fury as they rammed and backed into each other in a tangled mass. The wildly-swinging bucket on the toppling excavator swung, struck, and swung on. The limp body was flung several yards, falling ahead of the churning tracks of a bull-dozer.

By the time Brett and Danny had smashed the discarded control box to pieces, by the time the engines of the great machines had coughed their way to silence, the man who had unleashed their power had passed beyond the reach of justice.

Or, as Brett remarked later, he had met with the most appropriate justice that fate could provide.

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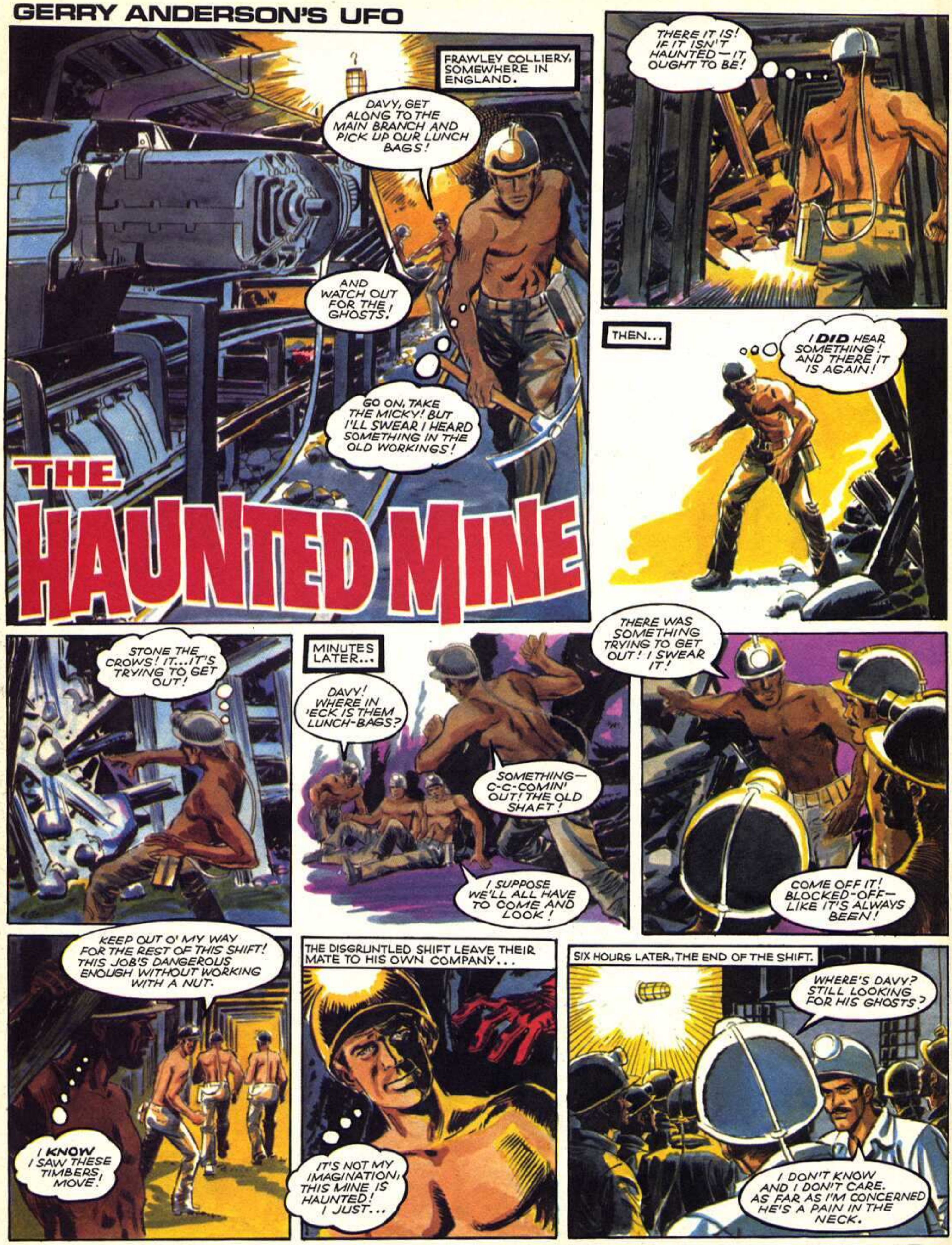
FRAWLEY COLLIERY, SOMEWHERE IN ENGLAND.
DAVY, GET ALONG TO THE MAIN BRANCH AND PICK UP OUR LUNCH BAGS!
AND WATCH OUT FOR THE GHOSTS!
GO ON, TAKE THE MICKY! BUT I'LL SWEAR I HEARD SOMETHING IN THE OLD WORKINGS!
THE HAUNTED MINE
THERE IT IS! IF IT ISN'T HAUNTED — IT OUGHT TO BE!
THEN...
I **DID** HEAR SOMETHING! AND THERE IT IS AGAIN!
STONE THE CROWS! IT...IT'S TRYING TO GET OUT!
MINUTES LATER...
DAVY! WHERE IN 'ECK IS THEM LUNCH-BAGS?
SOMETHING— C-C-COMIN' OUT! THE OLD SHAFT!
I SUPPOSE WE'LL ALL HAVE TO COME AND LOOK!
THERE WAS SOMETHING TRYING TO GET OUT! I SWEAR IT!
COME OFF IT! BLOCKED-OFF— LIKE IT'S ALWAYS BEEN!
KEEP OUT O' MY WAY FOR THE REST OF THIS SHIFT! THIS JOB'S DANGEROUS ENOUGH WITHOUT WORKING WITH A NUT.
I **KNOW** I SAW THESE TIMBERS MOVE!
THE DISGRUNTLED SHIFT LEAVE THEIR MATE TO HIS OWN COMPANY...
IT'S NOT MY IMAGINATION, THIS MINE IS HAUNTED! I JUST...
SIX HOURS LATER, THE END OF THE SHIFT.
WHERE'S DAVY? STILL LOOKING FOR HIS GHOSTS?
I DON'T KNOW AND I DON'T CARE. AS FAR AS I'M CONCERNED HE'S A PAIN IN THE NECK.

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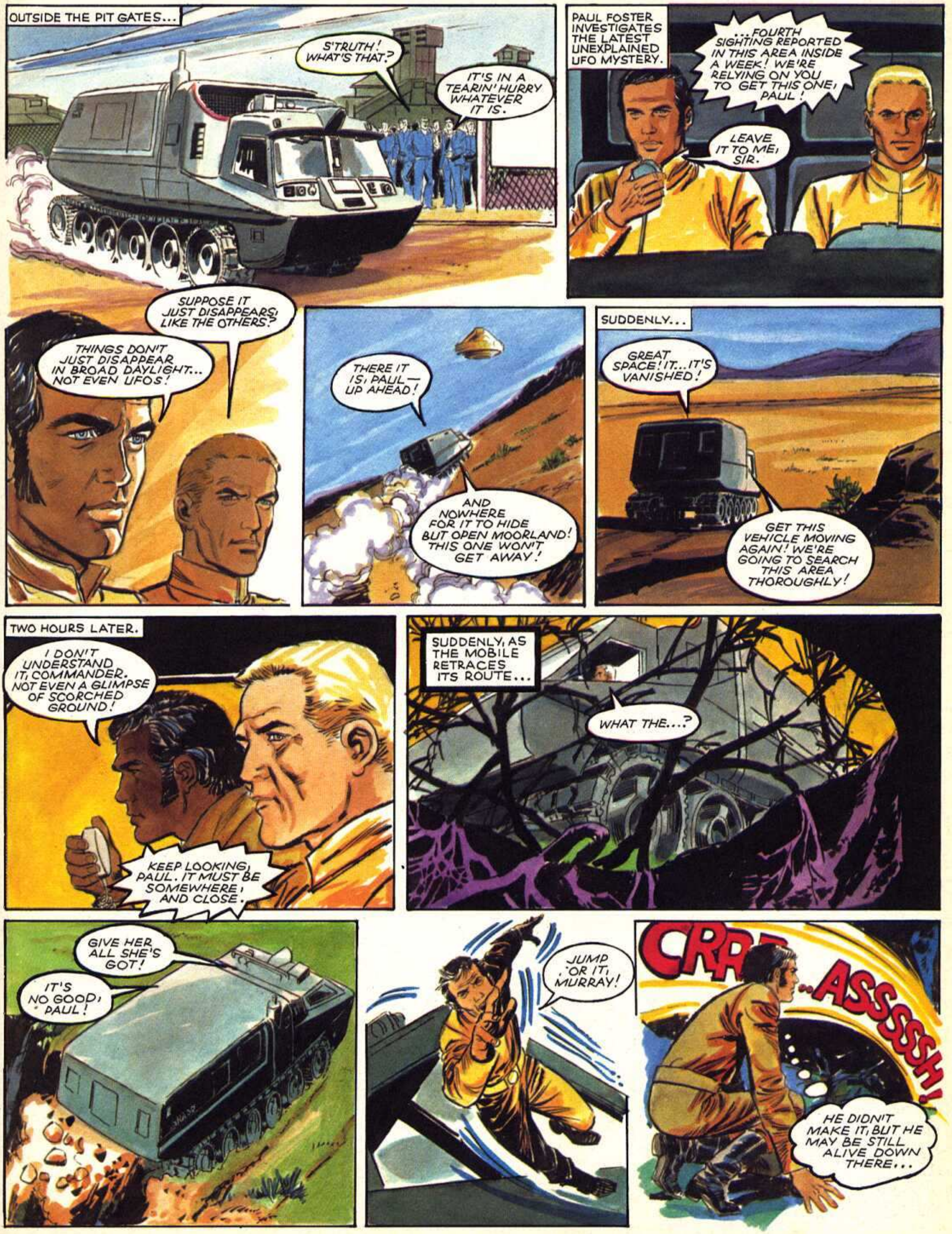
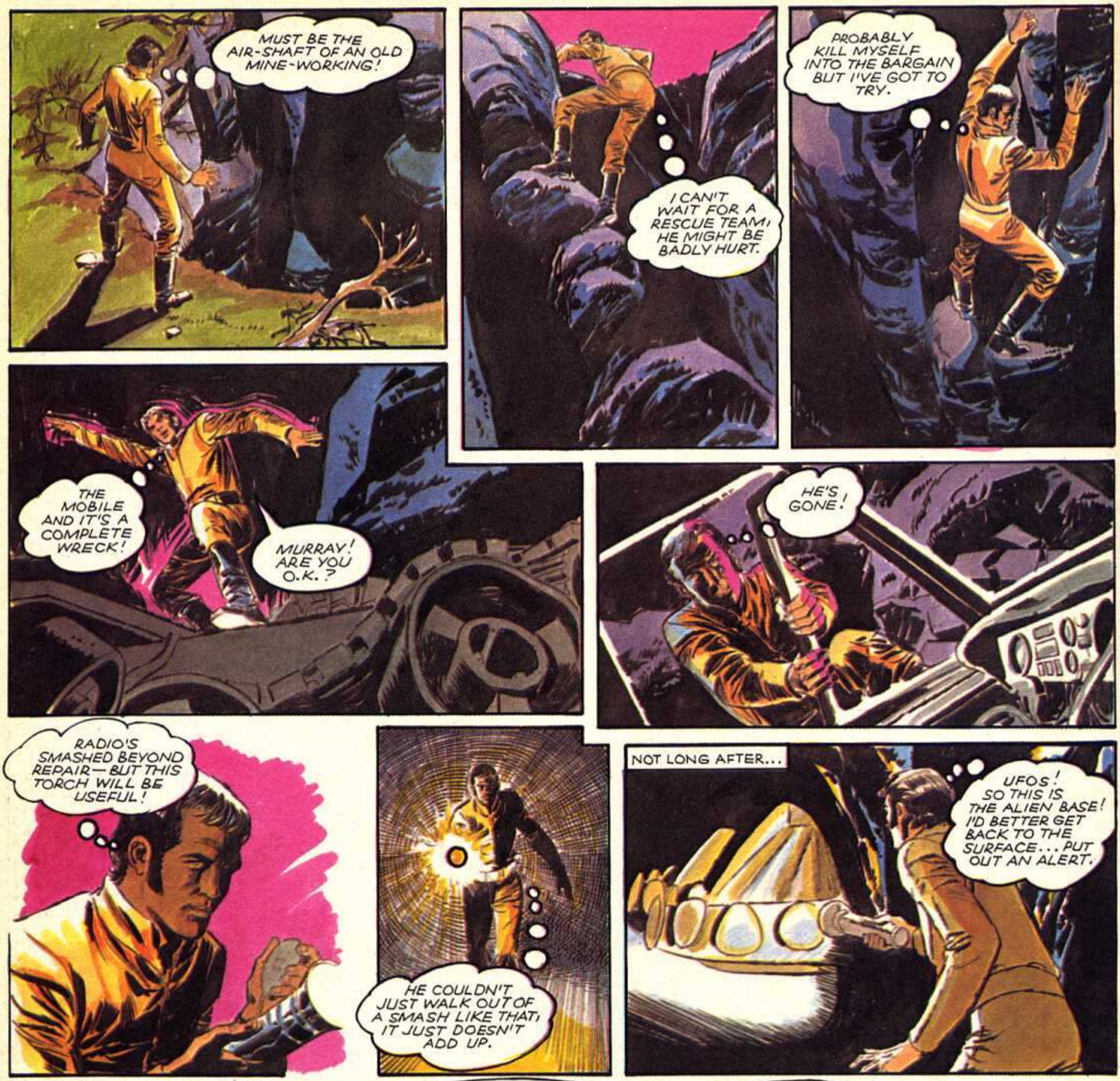
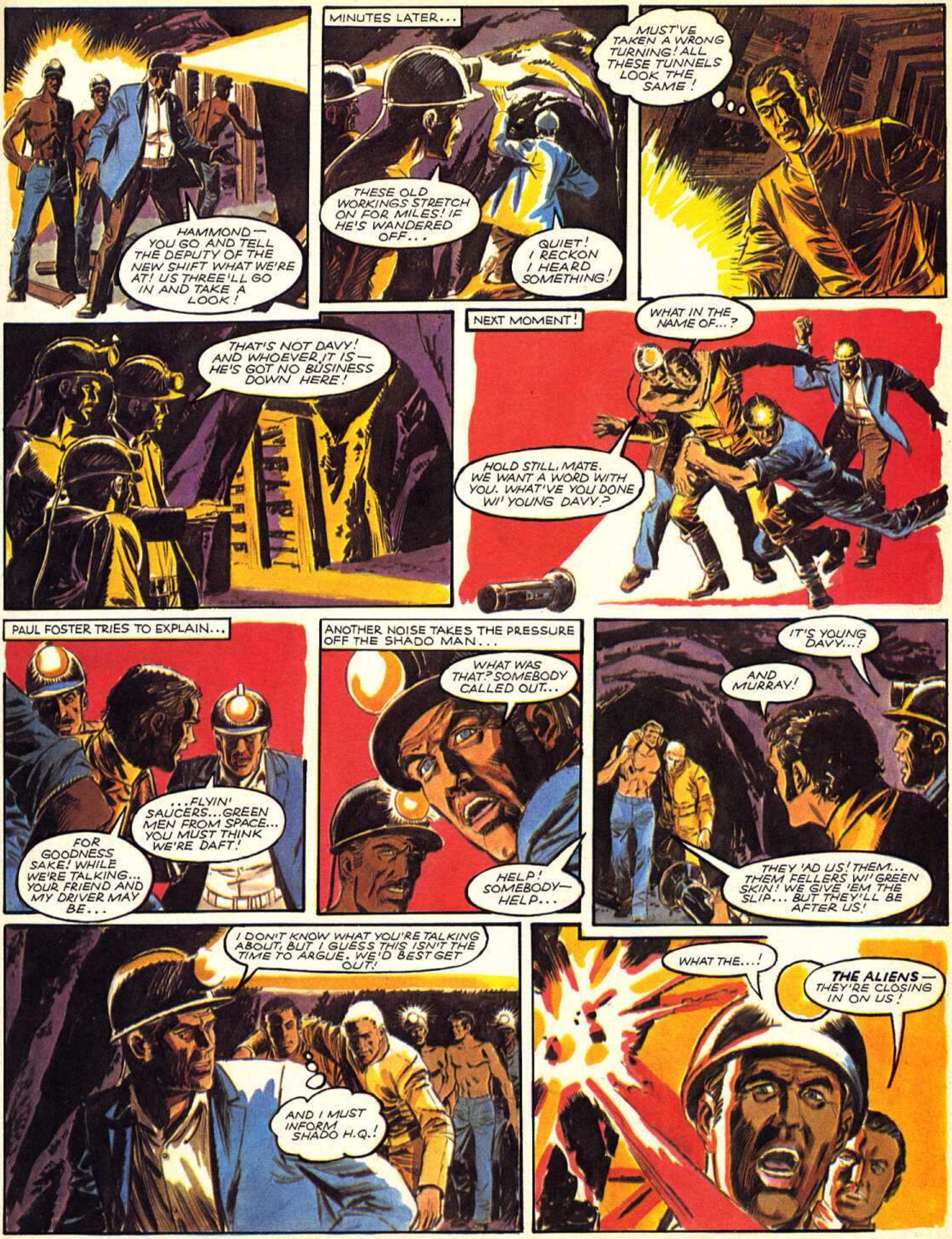
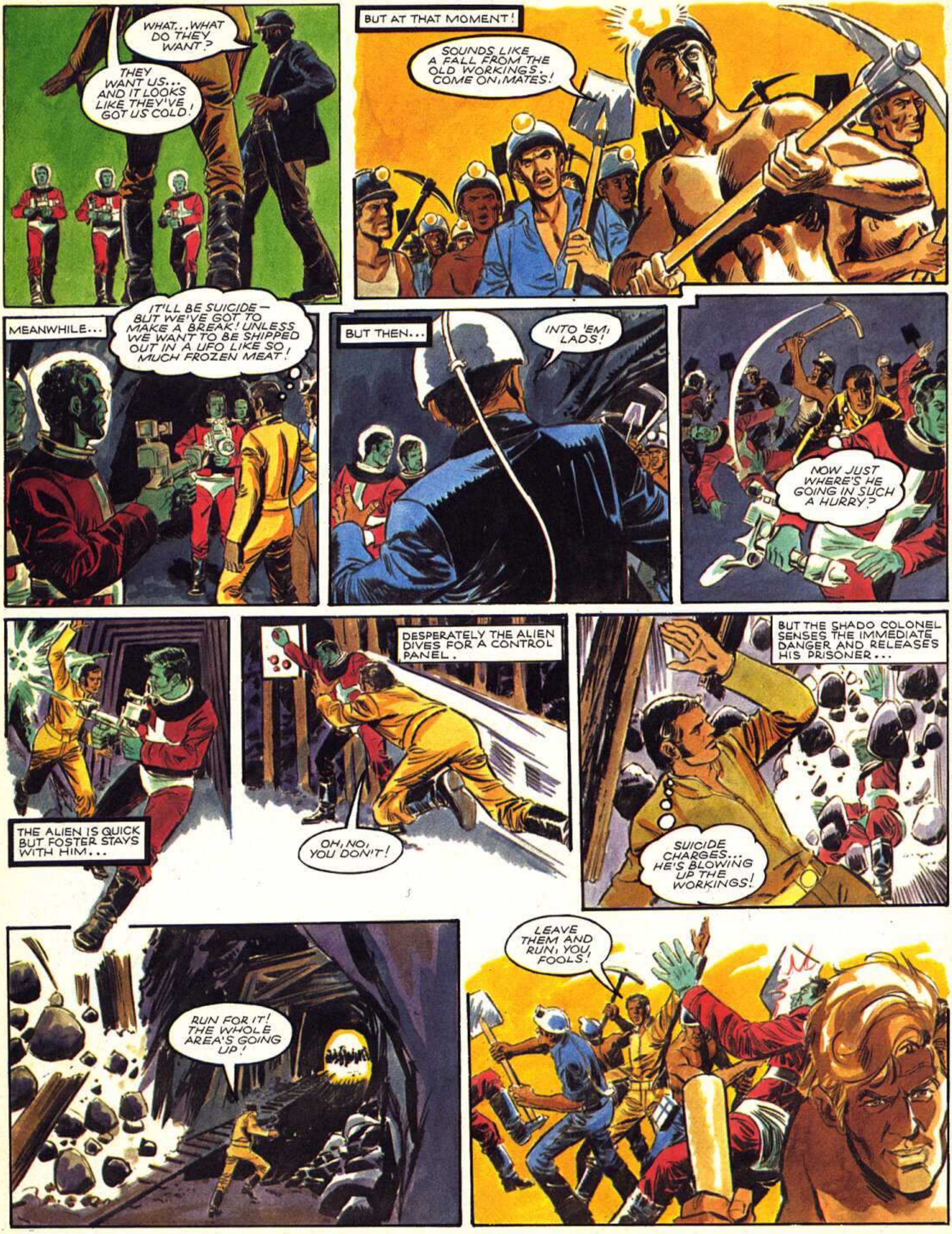
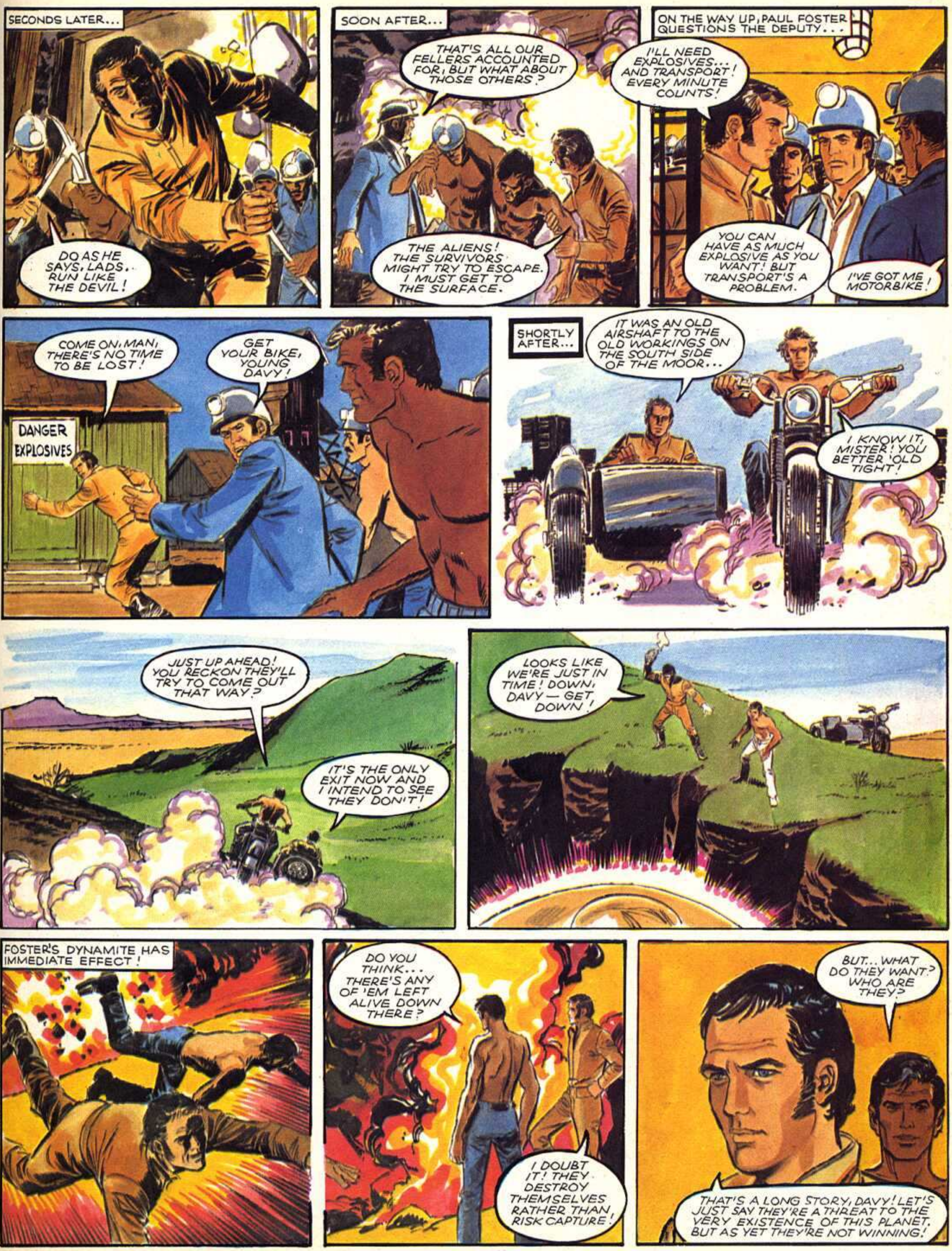

OUTSIDE THE PIT GATES...
S'TRUTH! WHAT'S THAT?
IT'S IN A TEARIN' HURRY WHATEVER IT IS.
PAUL FOSTER INVESTIGATES THE LATEST UNEXPLAINED UFO MYSTERY.
...FOURTH SIGHTING REPORTED IN THIS AREA INSIDE A WEEK! WE'RE RELYING ON YOU TO GET THIS ONE, PAUL!
LEAVE IT TO ME, SIR.
SUPPOSE IT JUST DISAPPEARS, LIKE THE OTHERS?
THINGS DON'T JUST DISAPPEAR IN BROAD DAYLIGHT... NOT EVEN UFOS!
THERE IT IS, PAUL— UP AHEAD!
AND NOWHERE FOR IT TO HIDE BUT OPEN MOORLAND! THIS ONE WON'T GET AWAY!
SUDDENLY...
GREAT SPACE! IT... IT'S VANISHED!
GET THIS VEHICLE MOVING AGAIN! WE'RE GOING TO SEARCH THIS AREA THOROUGHLY!
TWO HOURS LATER.
I DON'T UNDERSTAND IT, COMMANDER. NOT EVEN A GLIMPSE OF SCORCHED GROUND!
KEEP LOOKING, PAUL. IT MUST BE SOMEWHERE, AND CLOSE.
SUDDENLY, AS THE MOBILE RETRACES ITS ROUTE...
WHAT THE...?
GIVE HER ALL SHE'S GOT!
IT'S NO GOOD, PAUL!
JUMP FOR IT, MURRAY!
CRR...ASSSSSH!
HE DIDN'T MAKE IT, BUT HE MAY BE STILL ALIVE DOWN THERE...


MUST BE THE AIR-SHAFT OF AN OLD MINE-WORKING!
I CAN'T WAIT FOR A RESCUE TEAM, HE MIGHT BE BADLY HURT.
PROBABLY KILL MYSELF INTO THE BARGAIN BUT I'VE GOT TO TRY.
THE MOBILE AND IT'S A COMPLETE WRECK!
MURRAY! ARE YOU O.K.?
HE'S GONE!
RADIO'S SMASHED BEYOND REPAIR—BUT THIS TORCH WILL BE USEFUL!
HE COULDN'T JUST WALK OUT OF A SMASH LIKE THAT, IT JUST DOESN'T ADD UP.
NOT LONG AFTER...
UFOS! SO THIS IS THE ALIEN BASE! I'D BETTER GET BACK TO THE SURFACE... PUT OUT AN ALERT.
AT THAT MOMENT— NOT FAR AWAY!
YOU'RE SURE THIS IS WHERE YOU SAW HIM LAST?
AYE! LEANIN' AGAINST THAT TIMBER! BUT WE THOUGHT HE'D KNOCKED OFF EARLY...!
IF HE'D HAVE KNOCKED OFF—HE'D HAVE BEEN CHECKED OUT AT THE PIT-HEAD! SO HE'S STILL DOWN HERE SOMEWHERE!
D'YOU THINK HE MIGHT HAVE GONE INTO THE OLD SHAFT?
COULD BE, THESE TIMBERS ARE LOOSE, SOMEBODY'S OPENED UP THE OLD SHAFT!
'APPEN YOU'RE RIGHT! COME ON, LADS—GET THIS STUFF SHIFTED!


HAMMOND— YOU GO AND TELL THE DEPUTY OF THE NEW SHIFT WHAT WE'RE AT! US THREE'LL GO IN AND TAKE A LOOK!
MINUTES LATER...
THESE OLD WORKINGS STRETCH ON FOR MILES! IF HE'S WANDERED OFF...
QUIET! I RECKON I HEARD SOMETHING!
MUST'VE TAKEN A WRONG TURNING! ALL THESE TUNNELS LOOK THE SAME!
THAT'S NOT DAVY! AND WHOEVER IT IS— HE'S GOT NO BUSINESS DOWN HERE!
NEXT MOMENT!
WHAT IN THE NAME OF...?
HOLD STILL, MATE. WE WANT A WORD WITH YOU. WHAT'VE YOU DONE WI' YOUNG DAVY?
PAUL FOSTER TRIES TO EXPLAIN...
FOR GOODNESS SAKE! WHILE WE'RE TALKING... YOUR FRIEND AND MY DRIVER MAY BE...
...FLYIN' SAUCERS...GREEN MEN FROM SPACE... YOU MUST THINK WE'RE DAFT!
ANOTHER NOISE TAKES THE PRESSURE OFF THE SHADO MAN...
WHAT WAS THAT? SOMEBODY CALLED OUT...
HELP! SOMEBODY— HELP...
IT'S YOUNG DAVY...!
AND MURRAY!
THEY 'AD US! THEM... THEM FELLERS WI' GREEN SKIN! WE GIVE 'EM THE SLIP... BUT THEY'LL BE AFTER US!
I DON'T KNOW WHAT YOU'RE TALKING ABOUT, BUT I GUESS THIS ISN'T THE TIME TO ARGUE. WE'D BEST GET OUT!
AND I MUST INFORM SHADO H.Q.!
WHAT THE...!
THE ALIENS— THEY'RE CLOSING IN ON US!


WHAT...WHAT DO THEY WANT?
THEY WANT US... AND IT LOOKS LIKE THEY'VE GOT US COLD!
BUT AT THAT MOMENT!
SOUNDS LIKE A FALL FROM THE OLD WORKINGS. COME ON, MATES!
MEANWHILE...
IT'LL BE SUICIDE— BUT WE'VE GOT TO MAKE A BREAK! UNLESS WE WANT TO BE SHIPPED OUT IN A UFO LIKE SO MUCH FROZEN MEAT!
BUT THEN...
INTO 'EM, LADS!
NOW JUST WHERE'S HE GOING IN SUCH A HURRY?
THE ALIEN IS QUICK BUT FOSTER STAYS WITH HIM...
DESPERATELY THE ALIEN DIVES FOR A CONTROL PANEL.
OH, NO, YOU DON'T!
BUT THE SHADO COLONEL SENSES THE IMMEDIATE DANGER AND RELEASES HIS PRISONER...
SUICIDE CHARGES... HE'S BLOWING UP THE WORKINGS!
RUN FOR IT! THE WHOLE AREA'S GOING UP!
LEAVE THEM AND RUN, YOU FOOLS!


SECONDS LATER...
DO AS HE SAYS, LADS. RUN LIKE THE DEVIL!
SOON AFTER...
THAT'S ALL OUR FELLERS ACCOUNTED FOR, BUT WHAT ABOUT THOSE OTHERS?
THE ALIENS! THE SURVIVORS MIGHT TRY TO ESCAPE. I MUST GET TO THE SURFACE.
ON THE WAY UP, PAUL FOSTER QUESTIONS THE DEPUTY...
I'LL NEED EXPLOSIVES... AND TRANSPORT! EVERY MINUTE COUNTS!
YOU CAN HAVE AS MUCH EXPLOSIVE AS YOU WANT! BUT TRANSPORT'S A PROBLEM.
I'VE GOT ME MOTORBIKE!
COME ON, MAN, THERE'S NO TIME TO BE LOST!
GET YOUR BIKE, YOUNG DAVY!
DANGER EXPLOSIVES
SHORTLY AFTER...
IT WAS AN OLD AIRSHAFT TO THE OLD WORKINGS ON THE SOUTH SIDE OF THE MOOR...
I KNOW IT, MISTER! YOU BETTER 'OLD TIGHT!
JUST UP AHEAD! YOU RECKON THEY'LL TRY TO COME OUT THAT WAY?
IT'S THE ONLY EXIT NOW AND I INTEND TO SEE THEY DON'T!
LOOKS LIKE WE'RE JUST IN TIME! DOWN, DAVY — GET DOWN!
FOSTER'S DYNAMITE HAS IMMEDIATE EFFECT!
DO YOU THINK... THERE'S ANY OF 'EM LEFT ALIVE DOWN THERE?
I DOUBT IT! THEY DESTROY THEMSELVES RATHER THAN RISK CAPTURE!
BUT... WHAT DO THEY WANT? WHO ARE THEY?
THAT'S A LONG STORY, DAVY! LET'S JUST SAY THEY'RE A THREAT TO THE VERY EXISTENCE OF THIS PLANET. BUT AS YET THEY'RE NOT WINNING!

TOWARDS 2000

MAKING FOOD FROM THE WORLD'S WASTE

Would you fancy a nice juicy steak made from potatoes? Or how about a tasty chicken made from sugar cane? But perhaps you'd prefer to pick something from the menu derived from petroleum or skate wings?

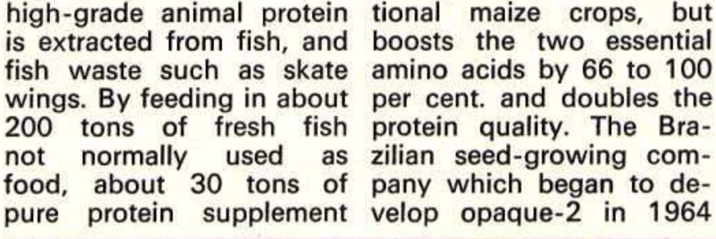
The search for new sources of edible protein was launched in response to the need to eliminate malnutrition among the world's growing millions, which is particularly dangerous during infancy when children starved of life-giving protein are extremely vulnerable to disease.

Engineers of the Louisiana State University built a plant which is successfully turning cellulose waste into high-protein food. It was built after scientists at the university discovered a micro-organism that breaks down the fibrous residue from sugar-cane. This edible end product, a single-cell protein, is straw-coloured and has the texture of rough flour. Researchers are hopeful that the system can be adapted for other cellulose wastes from agriculture and industry such as grass, hay, cornstalks, cotton vine, wood chips and newspapers.

In Britain, the National Research Development Corporation is backing a programme to produce protein from carbohydrates. The aim is to create a new high-quality protein for use in protein-enriched foods and as the basis for entirely new food products. This protein is known as A3/5.

Not only could A3/5 be used as a supplement in foods like bread, breakfast cereals and biscuits, but it could also be made to taste and look like normal meats, such as chicken, veal and beef, as well as other foods.

Another method of producing high-purity protein, this time from the sea, is under way in an extraction plant at Canso, Nova Scotia. Here, a bland, near-tasteless powder containing up to 95 per cent of high-grade animal protein is extracted from fish, and fish waste such as skate wings. By feeding in about 200 tons of fresh fish not normally used as food, about 30 tons of pure protein supplement can be produced per day.



Happy pigs await their food – unaware that it was once crude oil! Photograph courtesy British Petroleum and IPS

Petroleum, strangely enough, is another source of valuable protein. This was discovered by a BP laboratory near Marseilles in 1957. Basically, what happens is that yeast is grown on the hydrocarbons derived from petroleum products thousands of times more quickly than with conventional techniques. The yeast then undergoes a process to remove any remaining traces of oil and the final product appears as a yellowish, odourless powder that can be added directly to animal food.

Three American scientists working at Purdue University in Indiana discovered that a single mutant gene–opaque-2–increases the production of two essential amino acids, lysine and tryptophan, in the part of a maize kernel that surrounds the germ. The lack of these two amino acids is what makes maize so nutritionally poor, but the latest strain, produced in Brazil, not only contains more protein than conventional maize crops, but boosts the two essential amino acids by 66 to 100 per cent. and doubles the protein quality. The Brazilian seed-growing company which began to develop opaque-2 in 1964 is confident that the yield will produce fatter pigs, thus increasing the meat output and aiding the fight against the country's protein shortage. The company also tested the new seeds in making two cornflour products that can be used in cooking, and it was discovered that the corn is easier to mill and cook than regular grain.

The development of opaque-2, is regarded as a great scientific breakthrough, since it is the first demonstration that the protein composition of a seed can be dramatically changed by a single gene. It could be the key to the next great development.

The significance of opaque-2 is increased by the fact that many developing countries are experiencing a maize-growing boom.

Another example of how modern technology is helping agriculture is the prospect of breeding new food crops with built-in protection against air-pollution. Pollution-proof varieties generally have smaller stalks and leaves than existing varieties. Some of them, like pollution-resistant sugar canes and onions, are already in use in several areas of the United States.

The Apollo moon mission also looks like yielding valuable results in growing food. Biologist Charles Walkinshaw reported that he started with some very primitive plants – liverwort and fern. "We put a bit of powdered rock from the Sea of Tranquility on some of them and left others in a natural state," he said. "First thing you know, the moondust plants were very clearly ahead of the others in growth." The dust also made lettuce seeds grow faster.

All in all, the resources of modern science are making great strides in an attempt to forestall the threat which faces mankind – hunger. Modern technology will have to see to it that the world's larder is adequately replenished to meet the demands of humanity's need for more nourishing food.

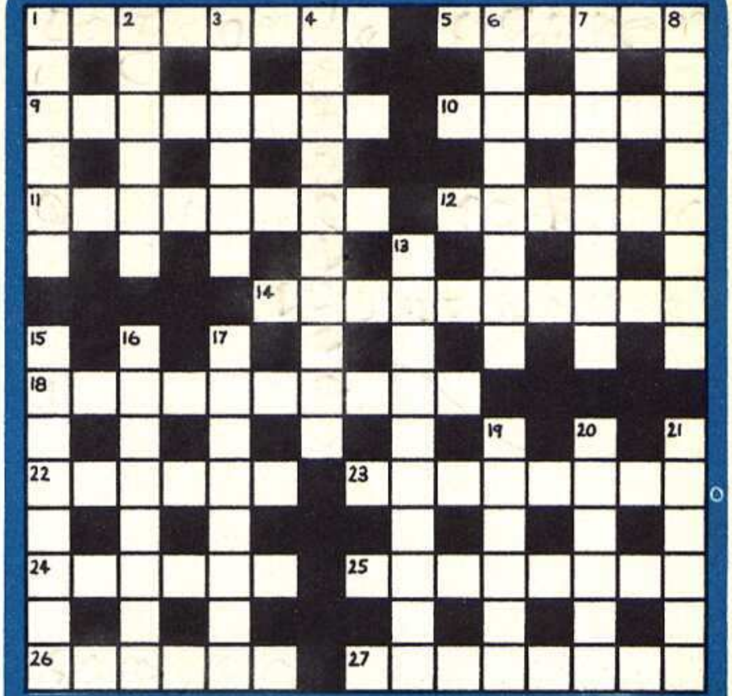
If the Moon is found to contain forces that enable plants to grow – what may the other cosmic bodies not contain? Or perhaps we do not need to travel on spaceships into outer space to discover the secret of the stars.

The secret may be right here on earth in our living environment.

Not so long ago a pile of maize like this would have been nutritionally poor, lacking essential proteins. The development of opaque-2 (high-lysine) maize, a new 'super grain', has greatly increased protein quality

High-lysine maize could be a key factor in providing the world with a protein sufficiency. It is expected to produce revolutionary changes in human nutrition and livestock feeding because its protein quality has been genetically doubled over ordinary hybrids so that it almost equals the nutritional value of milk.

Dr. Dale Harpstead, an American geneticist, examines an ear of the new maize in Colombia. Many critically malnourished children are being fed on the grain to bring them back to health.



Clues Across

1. Anglo-French super plane (8)
5. Curve of a road (6)
9. Tough soldiers from Ancient Greece (8)
10. Well known drink (6)
11. What a surgeon does (8)
12. Steals guns? (6)
14. It gives warning to ships when close to shore (10)
18. Scaly part of the hand (10)
22. Less difficult (6)
23. Sea creature from Outer Space? (4-4)
24. Old-fashioned neckwear (6)
25. Popular American sport (8)
26. Tom Jones, for example (6)
27. An official appointed to charge a certain sum of money by way of tax (8)

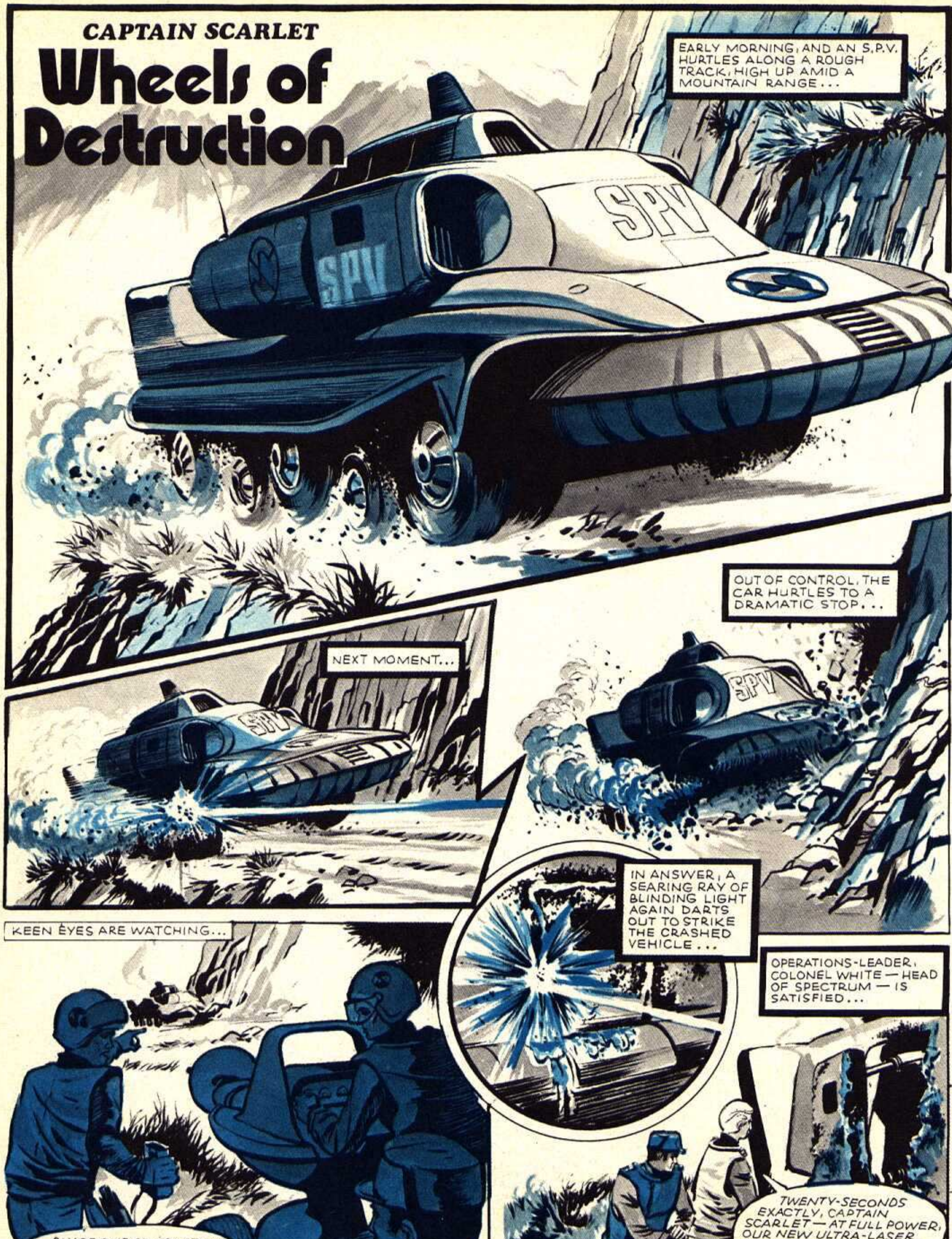
Clues Down

1. Small wheel on the bottom of a chair (6)
2. Smarter (6)
3. Fugitive from justice (6)
4. Common, bright yellow flowers that have a tonic property (10)
6. It produces an intense illumination (3-5)
7. Kernel of a palm-tree fruit eaten in the East (5-3)
8. Served up in a new form after being used (8)
13. They were thrown to the lions! (10)
15. Committed by a law-breaker (8)
16. Teacher won't want to see this on your homework (3-5)
17. Soft music played on a quiet evening (8)
19. Change from a liquid to a solid state by removal of heat (6)
20. Exams at end of school (6)
21. Ship that hunts the largest sea creatures (6)

Answers on page 77

CAPTAIN SCARLET

Wheels of Destruction


EARLY MORNING, AND AN S.P.V. HURTLES ALONG A ROUGH TRACK, HIGH UP AMID A MOUNTAIN RANGE...
SPV
SPV
NEXT MOMENT...
OUT OF CONTROL, THE CAR HURTLES TO A DRAMATIC STOP...
KEEN EYES ARE WATCHING...
PHASE ONE COMPLETELY SUCCESSFUL! CONTINUE WITH THE NEXT STAGE...
IN ANSWER, A SEARING RAY OF BLINDING LIGHT AGAIN DARTS OUT TO STRIKE THE CRASHED VEHICLE...
OPERATIONS-LEADER, COLONEL WHITE — HEAD OF SPECTRUM — IS SATISFIED...
TWENTY-SECONDS EXACTLY, CAPTAIN SCARLET — AT FULL POWER, OUR NEW ULTRA-LASER GUN COULD CUT THE CAR TO SHREDS IN FOUR MINUTES...

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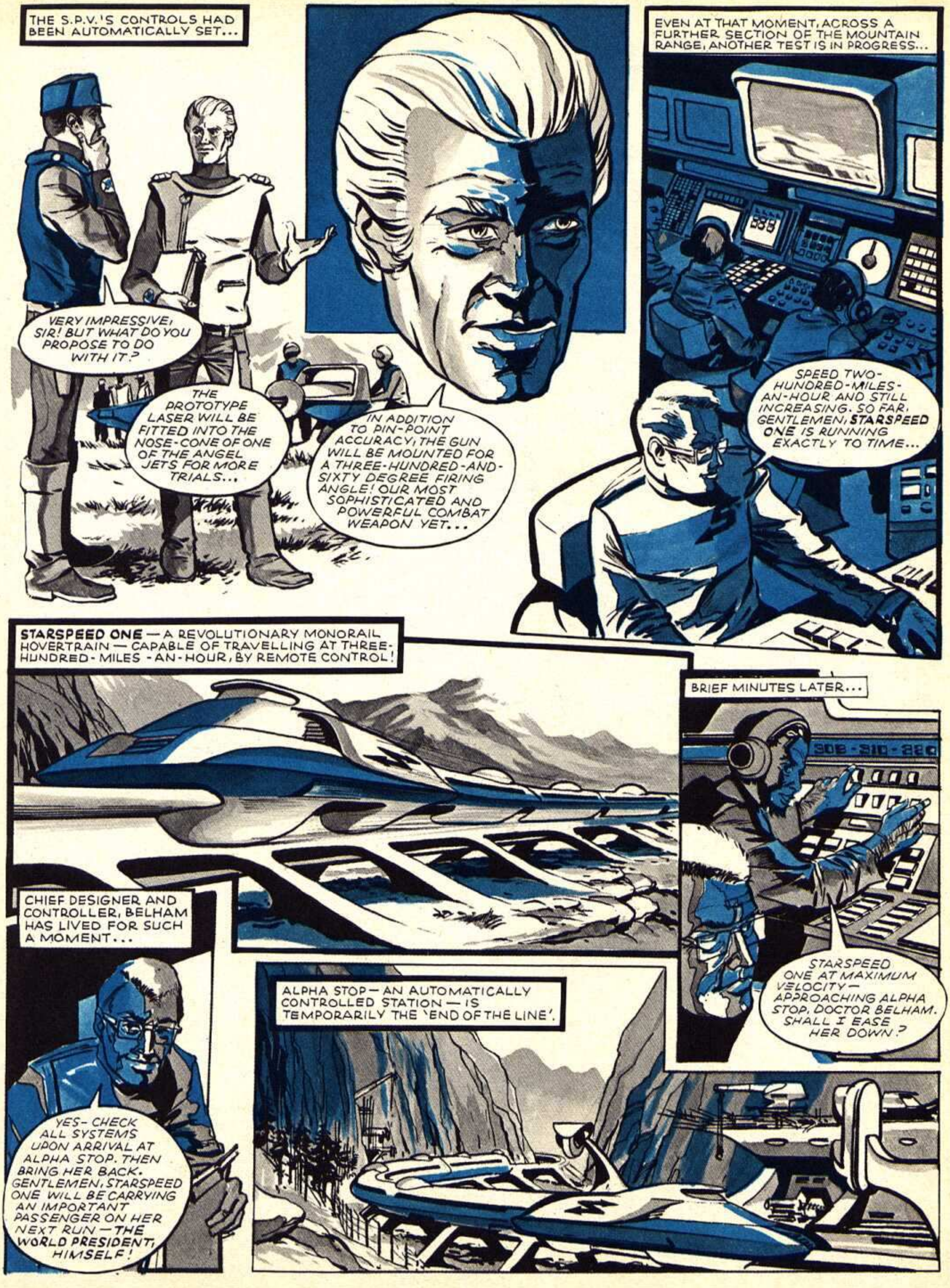
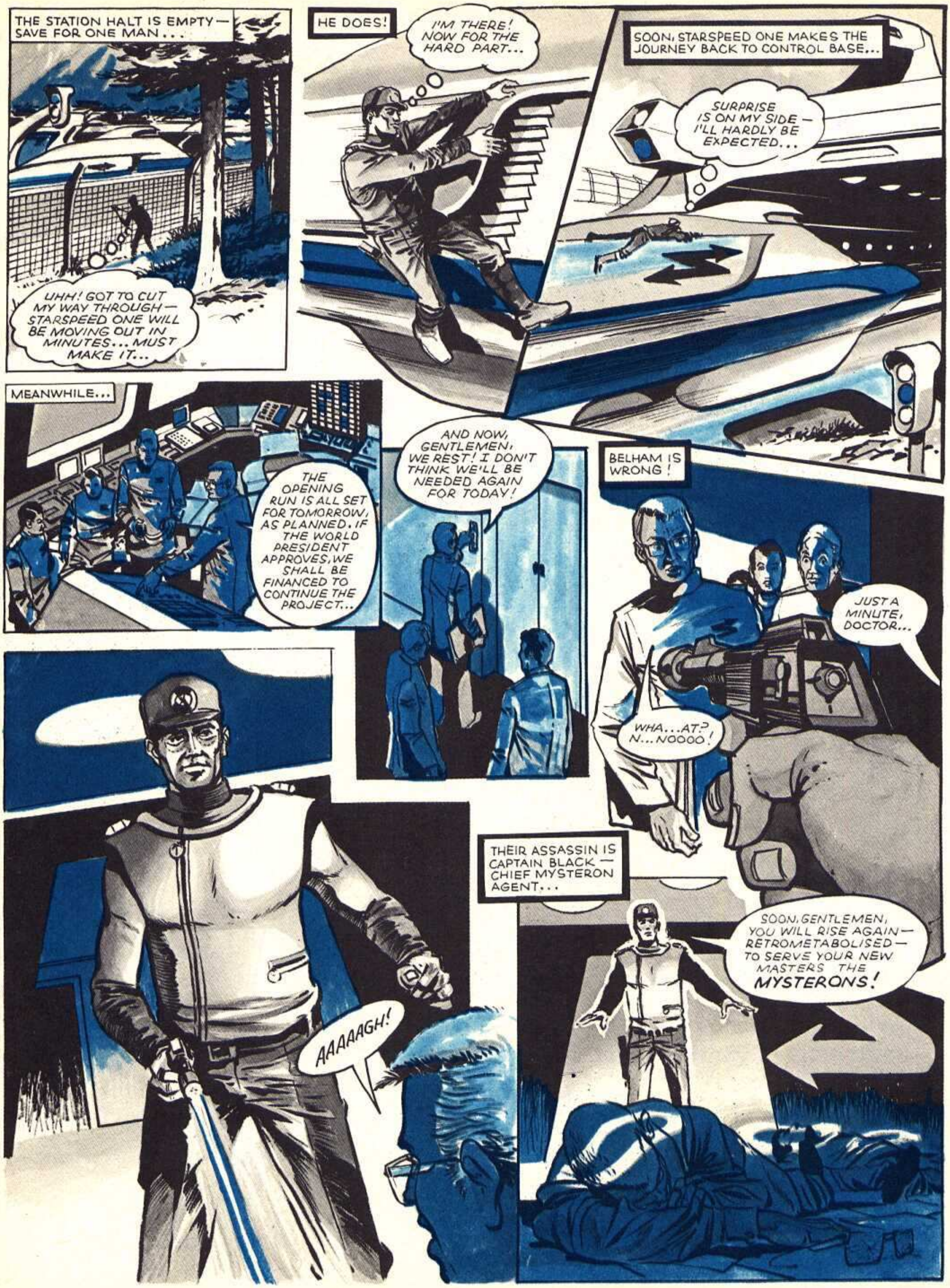
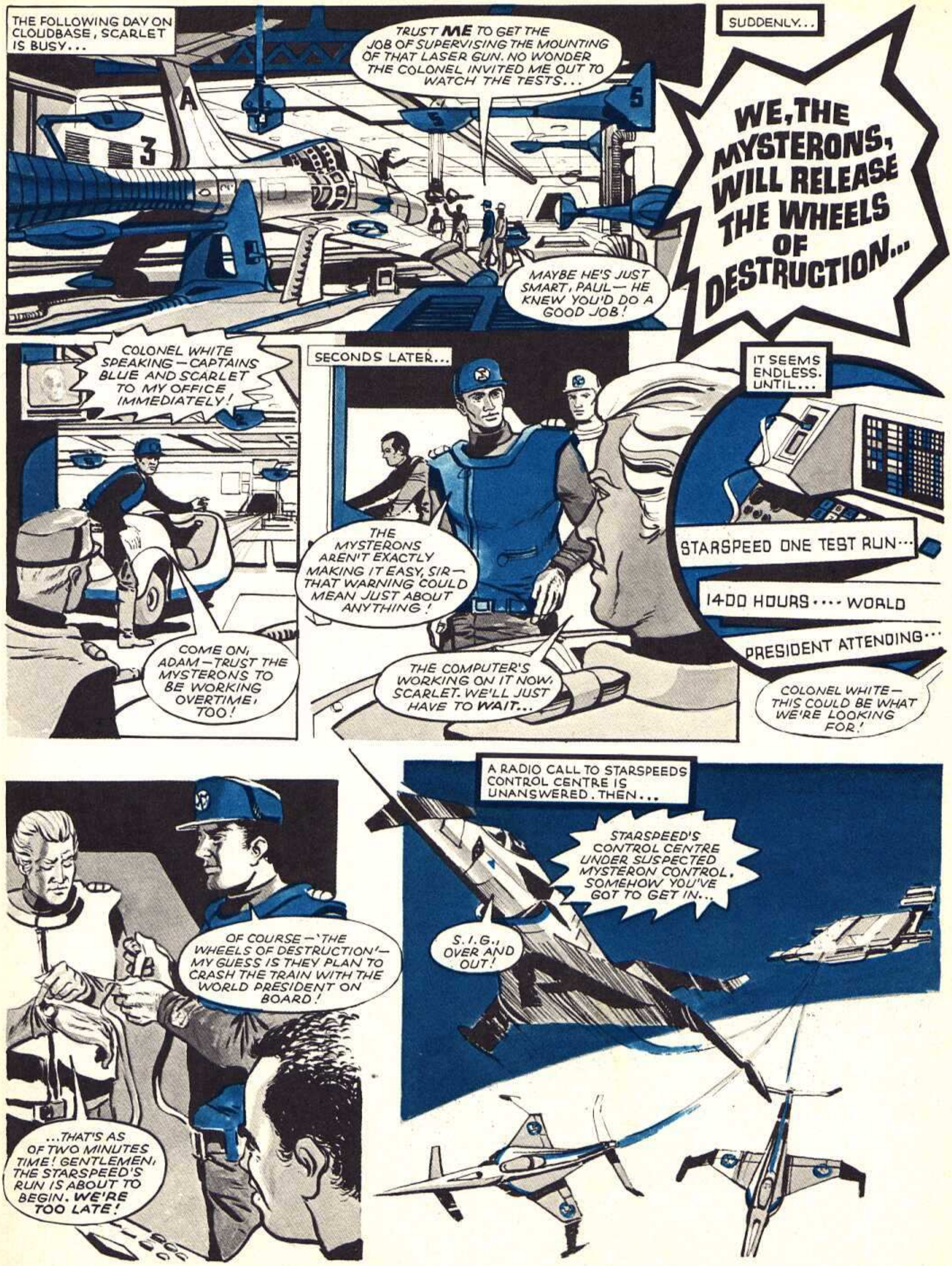
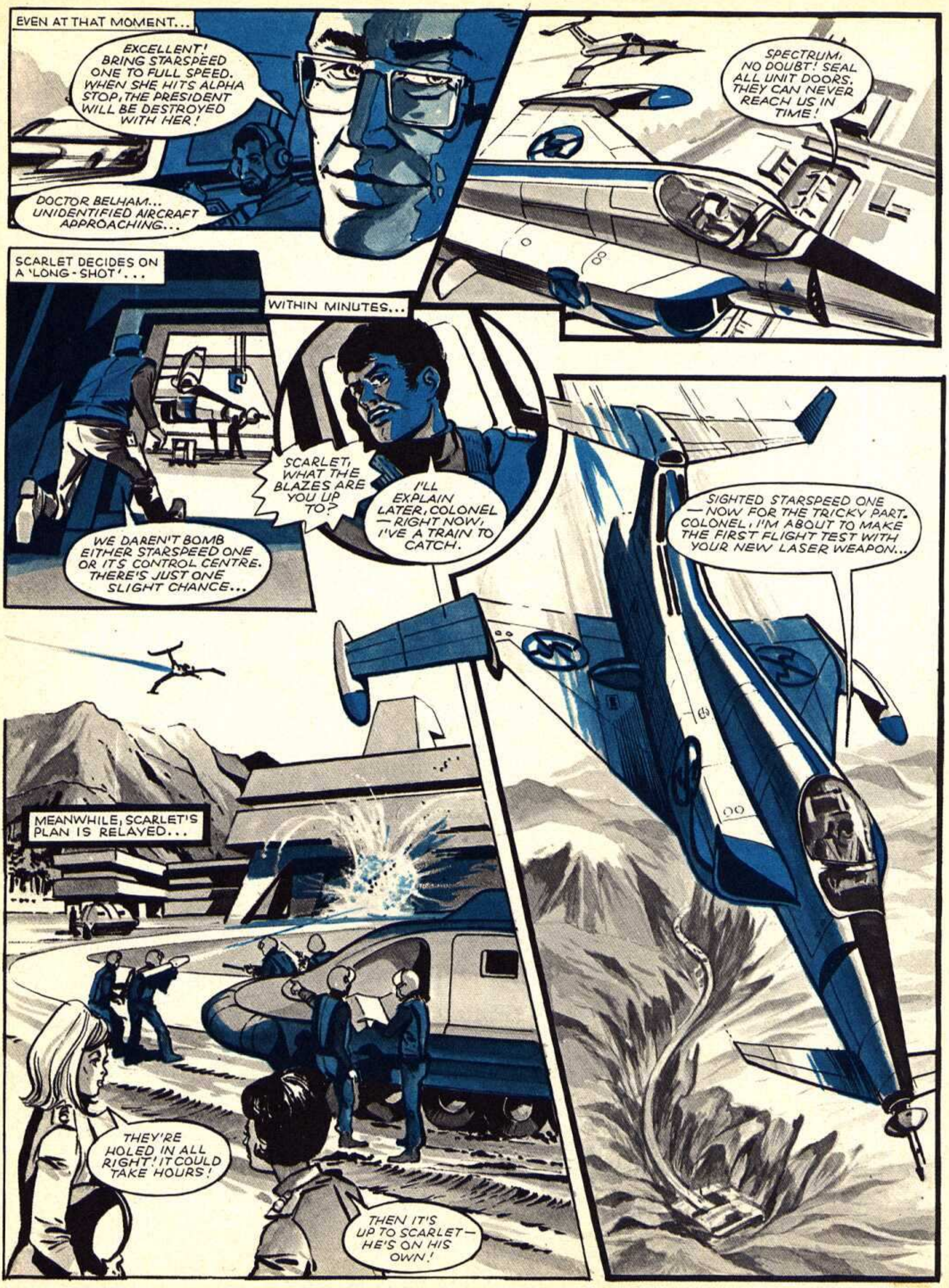
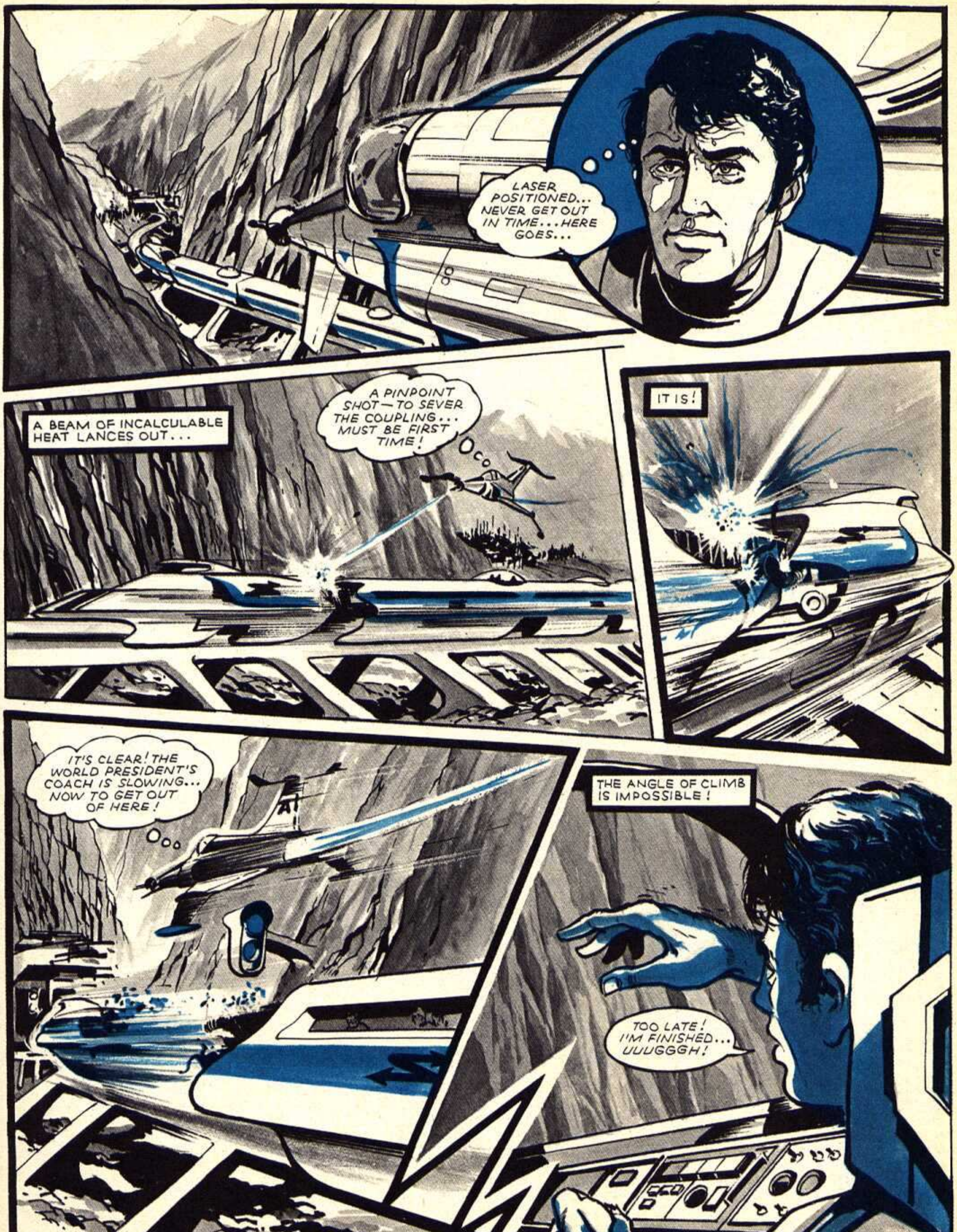
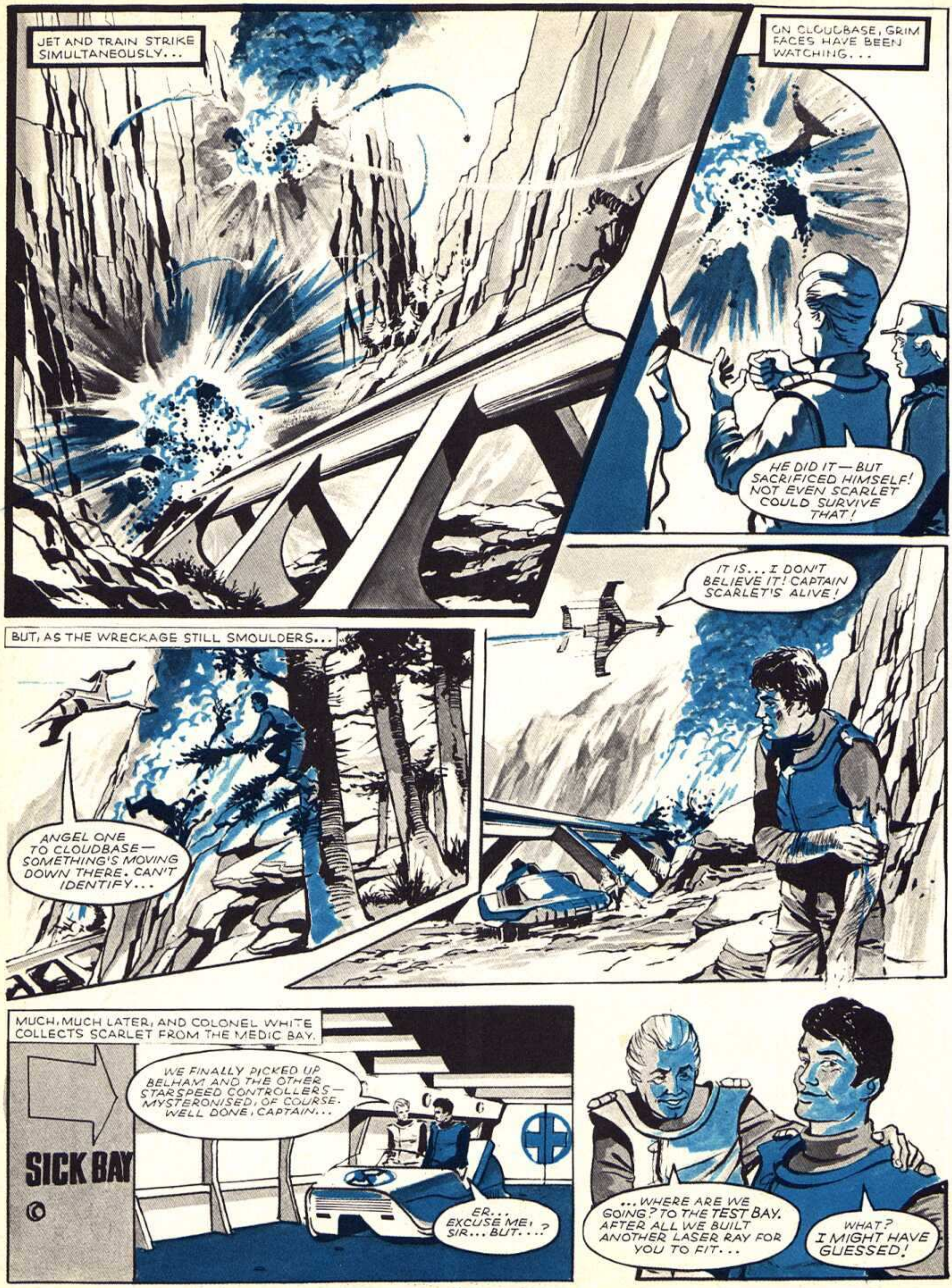

THE S.P.V.'S CONTROLS HAD BEEN AUTOMATICALLY SET...
VERY IMPRESSIVE, SIR! BUT WHAT DO YOU PROPOSE TO DO WITH IT?
THE PROTOTYPE LASER WILL BE FITTED INTO THE NOSE-CONE OF ONE OF THE ANGEL JETS FOR MORE TRIALS...
IN ADDITION TO PIN-POINT ACCURACY, THE GUN WILL BE MOUNTED FOR A THREE-HUNDRED-AND-SIXTY DEGREE FIRING ANGLE! OUR MOST SOPHISTICATED AND POWERFUL COMBAT WEAPON YET...
EVEN AT THAT MOMENT, ACROSS A FURTHER SECTION OF THE MOUNTAIN RANGE, ANOTHER TEST IS IN PROGRESS...
SPEED TWO-HUNDRED-MILES-AN-HOUR AND STILL INCREASING. SO FAR, GENTLEMEN, STARSPEED ONE IS RUNNING EXACTLY TO TIME...
STARSPEED ONE — A REVOLUTIONARY MONORAIL HOVERTRAIN — CAPABLE OF TRAVELLING AT THREE-HUNDRED-MILES-AN-HOUR, BY REMOTE CONTROL!
BRIEF MINUTES LATER...
STARSPEED ONE AT MAXIMUM VELOCITY — APPROACHING ALPHA STOP, DOCTOR BELHAM. SHALL I EASE HER DOWN?
CHIEF DESIGNER AND CONTROLLER, BELHAM HAS LIVED FOR SUCH A MOMENT...
YES — CHECK ALL SYSTEMS UPON ARRIVAL AT ALPHA STOP. THEN BRING HER BACK. GENTLEMEN, STARSPEED ONE WILL BE CARRYING AN IMPORTANT PASSENGER ON HER NEXT RUN — THE WORLD PRESIDENT, HIMSELF!
ALPHA STOP — AN AUTOMATICALLY CONTROLLED STATION — IS TEMPORARILY THE 'END OF THE LINE'.


THE STATION HALT IS EMPTY — SAVE FOR ONE MAN...
UHH! GOT TO CUT MY WAY THROUGH — STARSPEED ONE WILL BE MOVING OUT IN MINUTES... MUST MAKE IT...
HE DOES!
I'M THERE! NOW FOR THE HARD PART...
SOON, STARSPEED ONE MAKES THE JOURNEY BACK TO CONTROL BASE...
SURPRISE IS ON MY SIDE — I'LL HARDLY BE EXPECTED...
MEANWHILE...
THE OPENING RUN IS ALL SET FOR TOMORROW, AS PLANNED. IF THE WORLD PRESIDENT APPROVES, WE SHALL BE FINANCED TO CONTINUE THE PROJECT...
AND NOW, GENTLEMEN, WE REST! I DON'T THINK WE'LL BE NEEDED AGAIN FOR TODAY!
BELHAM IS WRONG!
JUST A MINUTE, DOCTOR...
WHA...AT? N...NOOOO!
AAAAAGH!
THEIR ASSASSIN IS CAPTAIN BLACK — CHIEF MYSTERON AGENT...
SOON, GENTLEMEN, YOU WILL RISE AGAIN — RETROMETABOLISED — TO SERVE YOUR NEW MASTERS THE MYSTERONS!

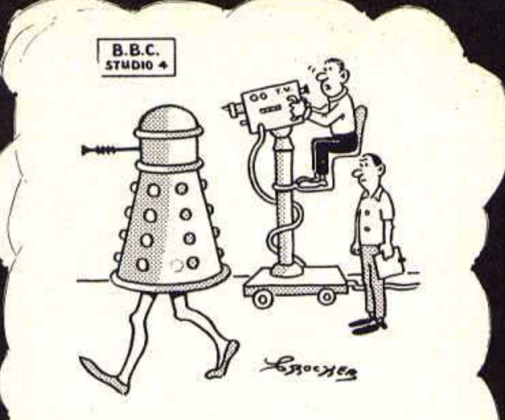

THE FOLLOWING DAY ON CLOUDBASE, SCARLET IS BUSY...
TRUST **ME** TO GET THE JOB OF SUPERVISING THE MOUNTING OF THAT LASER GUN. NO WONDER THE COLONEL INVITED ME OUT TO WATCH THE TESTS...
MAYBE HE'S JUST SMART, PAUL— HE KNEW YOU'D DO A GOOD JOB!
SUDDENLY...
WE, THE MYSTERONS, WILL RELEASE THE WHEELS OF DESTRUCTION...
COLONEL WHITE SPEAKING—CAPTAINS BLUE AND SCARLET TO MY OFFICE IMMEDIATELY!
COME ON, ADAM—TRUST THE MYSTERONS TO BE WORKING OVERTIME, TOO!
SECONDS LATER...
THE MYSTERONS AREN'T EXACTLY MAKING IT EASY, SIR— THAT WARNING COULD MEAN JUST ABOUT ANYTHING!
THE COMPUTER'S WORKING ON IT NOW, SCARLET. WE'LL JUST HAVE TO **WAIT...**
IT SEEMS ENDLESS. UNTIL...
STARSPEED ONE TEST RUN···
1400 HOURS···· WORLD
PRESIDENT ATTENDING···
COLONEL WHITE— THIS COULD BE WHAT WE'RE LOOKING FOR!
OF COURSE—'THE WHEELS OF DESTRUCTION'— MY GUESS IS THEY PLAN TO CRASH THE TRAIN WITH THE WORLD PRESIDENT ON BOARD!
...THAT'S AS OF TWO MINUTES TIME! GENTLEMEN, THE STARSPEED'S RUN IS ABOUT TO BEGIN. **WE'RE TOO LATE!**
A RADIO CALL TO STARSPEEDS CONTROL CENTRE IS UNANSWERED. THEN...
STARSPEED'S CONTROL CENTRE UNDER SUSPECTED MYSTERON CONTROL. SOMEHOW YOU'VE GOT TO GET IN...
S.I.G., OVER AND OUT!
A
3
5
5


EVEN AT THAT MOMENT...
EXCELLENT! BRING STARSPEED ONE TO FULL SPEED. WHEN SHE HITS ALPHA STOP, THE PRESIDENT WILL BE DESTROYED WITH HER!
DOCTOR BELHAM... UNIDENTIFIED AIRCRAFT APPROACHING...
SPECTRUM, NO DOUBT! SEAL ALL UNIT DOORS. THEY CAN NEVER REACH US IN TIME!
SCARLET DECIDES ON A 'LONG-SHOT'...
WITHIN MINUTES...
SCARLET, WHAT THE BLAZES ARE YOU UP TO?
I'LL EXPLAIN LATER, COLONEL — RIGHT NOW, I'VE A TRAIN TO CATCH.
WE DAREN'T BOMB EITHER STARSPEED ONE OR ITS CONTROL CENTRE. THERE'S JUST ONE SLIGHT CHANCE...
SIGHTED STARSPEED ONE — NOW FOR THE TRICKY PART. COLONEL, I'M ABOUT TO MAKE THE FIRST FLIGHT TEST WITH YOUR NEW LASER WEAPON...
MEANWHILE, SCARLET'S PLAN IS RELAYED...
THEY'RE HOLED IN ALL RIGHT! IT COULD TAKE HOURS!
THEN IT'S UP TO SCARLET — HE'S ON HIS OWN!

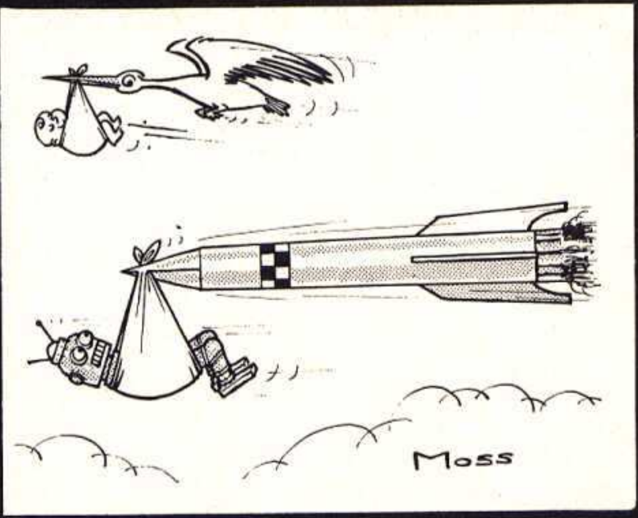

LASER POSITIONED... NEVER GET OUT IN TIME... HERE GOES...
A BEAM OF INCALCULABLE HEAT LANCES OUT...
A PINPOINT SHOT—TO SEVER THE COUPLING... MUST BE FIRST TIME!
IT IS!
IT'S CLEAR! THE WORLD PRESIDENT'S COACH IS SLOWING... NOW TO GET OUT OF HERE!
THE ANGLE OF CLIMB IS IMPOSSIBLE!
TOO LATE! I'M FINISHED... UUUGGGH!

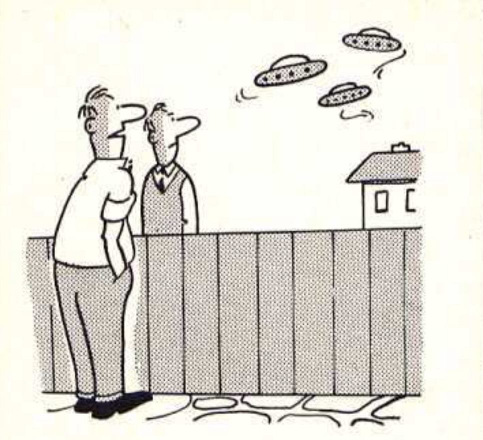

JET AND TRAIN STRIKE SIMULTANEOUSLY...
ON CLOUDBASE, GRIM FACES HAVE BEEN WATCHING...
HE DID IT — BUT SACRIFICED HIMSELF! NOT EVEN SCARLET COULD SURVIVE THAT!
BUT, AS THE WRECKAGE STILL SMOULDERS...
ANGEL ONE TO CLOUDBASE — SOMETHING'S MOVING DOWN THERE. CAN'T IDENTIFY...
IT IS... I DON'T BELIEVE IT! CAPTAIN SCARLET'S ALIVE!
MUCH, MUCH LATER, AND COLONEL WHITE COLLECTS SCARLET FROM THE MEDIC BAY.
SICK BAY
WE FINALLY PICKED UP BELHAM AND THE OTHER STARSPEED CONTROLLERS — MYSTERONISED, OF COURSE. WELL DONE, CAPTAIN...
ER... EXCUSE ME, SIR... BUT...?
...WHERE ARE WE GOING? TO THE TEST BAY. AFTER ALL WE BUILT ANOTHER LASER RAY FOR YOU TO FIT...
WHAT? I MIGHT HAVE GUESSED!

FUNOLOGY

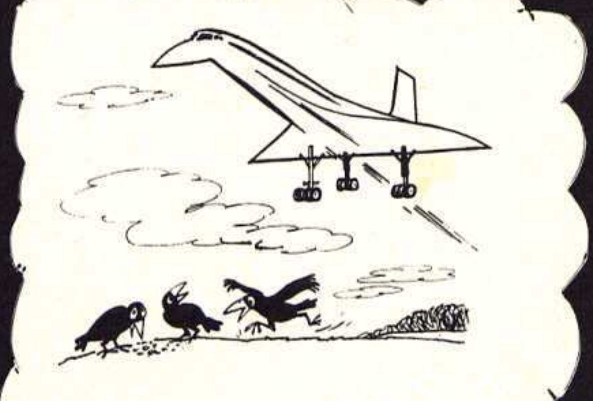

B.B.C. STUDIO 4
BROCKER

I SUPPOSE IT HAD TO COME—MINI DALEKS

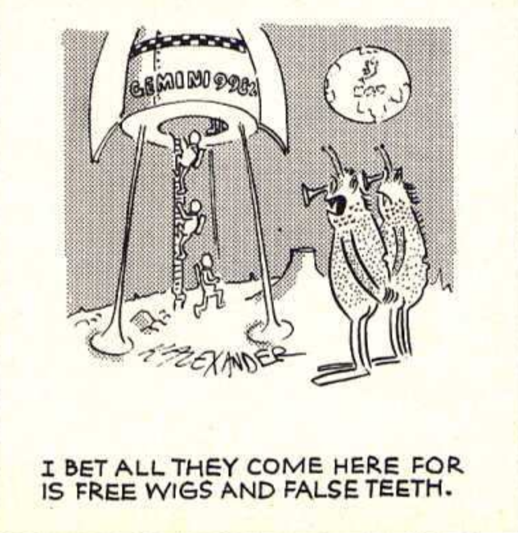




BLIMEY! THEY'VE STARTED THEIR HOLIDAYS EARLY THIS YEAR.



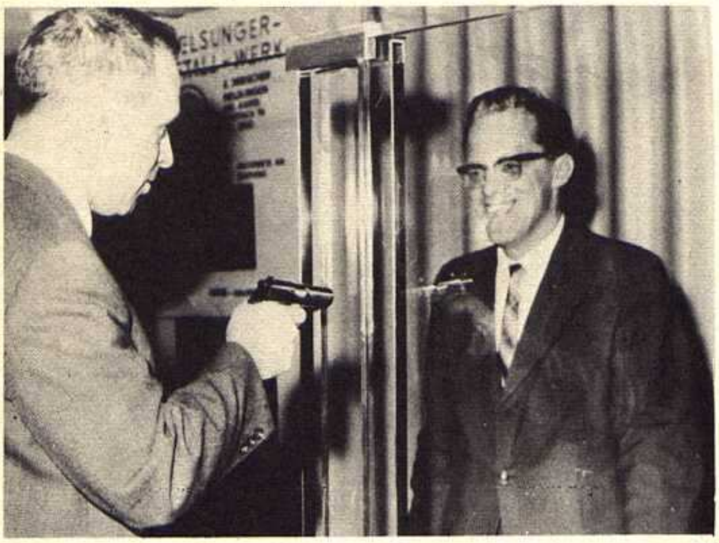
LOOK OUT! GOBBLE IT ALL UP QUICKLY!


GEMINI 9982
ALEXANDER

I BET ALL THEY COME HERE FOR IS FREE WIGS AND FALSE TEETH.

DATA

1 Here's a hold-up with a difference. Can you guess why the bank teller is grinning cheerfully at the gunman – who, within seconds, fired point-blank at him?

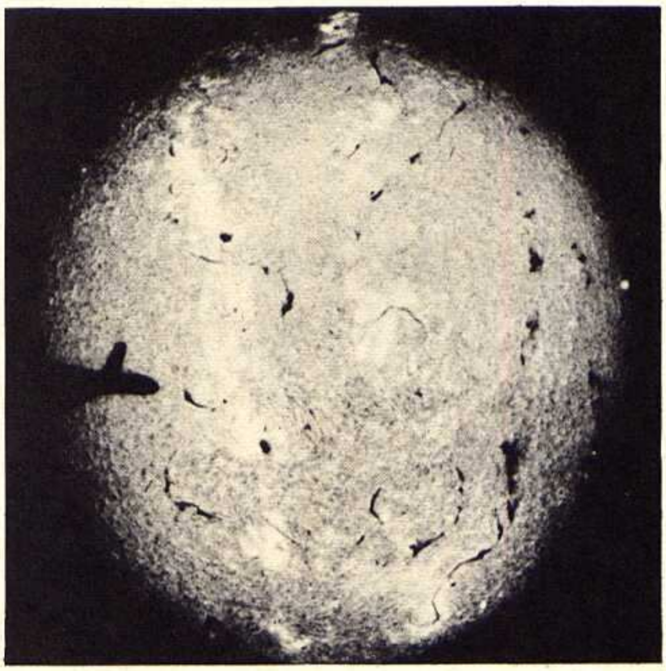


2 Insert the word that completes the first word and starts the second.

VEN(.....)HER (A clue is: Not them!)

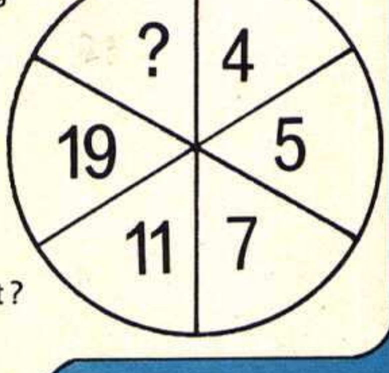
If you think that's easy, try this one:

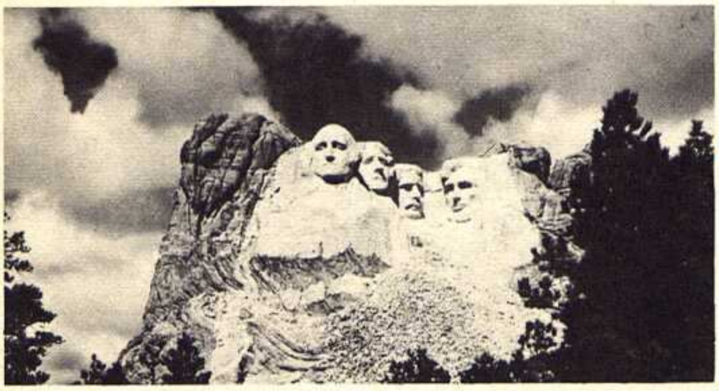
RA(..........)ROT (Clue: Seaside attraction)



3 What's this – a golf-ball, a Christmas pud, a ball of silver paper? Look carefully at the shadow on the left before giving your answer.

4 Insert the missing number:





5 The faces of four U.S. Presidents are carved out of the solid granite of Mount Rushmore in the Black Hills of South Dakota. How many can you identify?

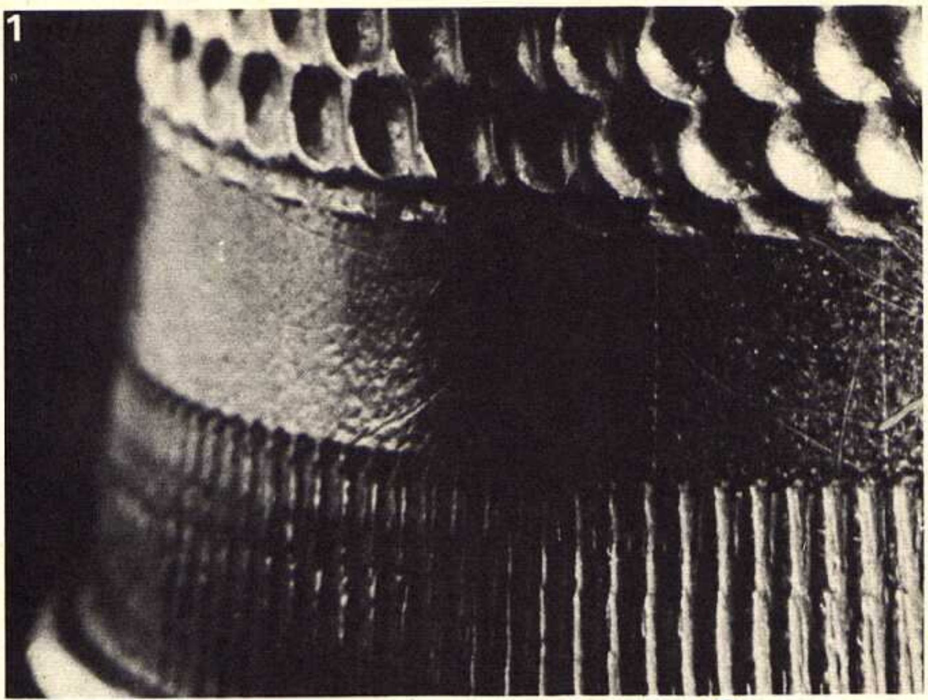
6 Which town is the odd-man-out?
PARIS LONDON
NEW YORK
MOSCOW BONN
WASHINGTON

7 Can you sort out these jumbled letters to spell the names of eleven heavenly bodies?

STRAUN PITRUJE
RAMS HERAT
NUS NOMO
YEMURRC NUVES
POTUL SAUNUR
PUNTEEN

8 Can you name the three astronauts aboard the ill-fated Apollo 13?

Answers on Page 77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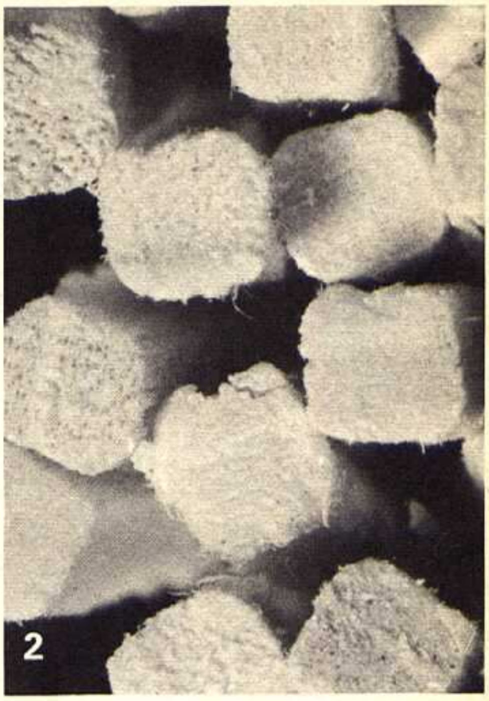
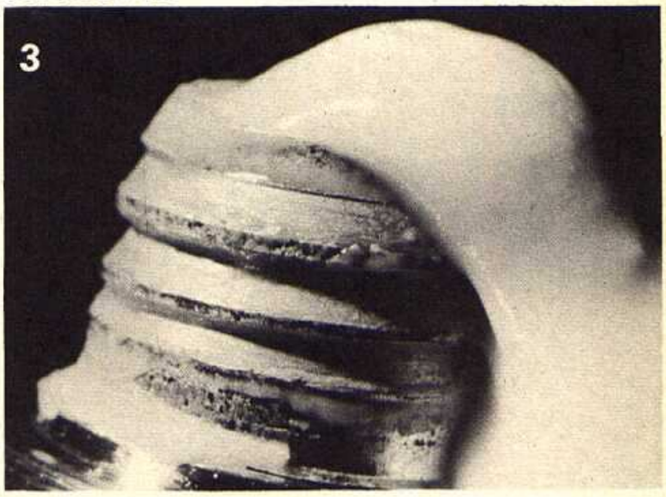

2

PROBE

EYE TRICKS

The eyes can play funny tricks on you, especially when related to the matter of size. Just look at these photographs of commonplace, easy-to-recognise objects and test your own eyes – if you don't believe me.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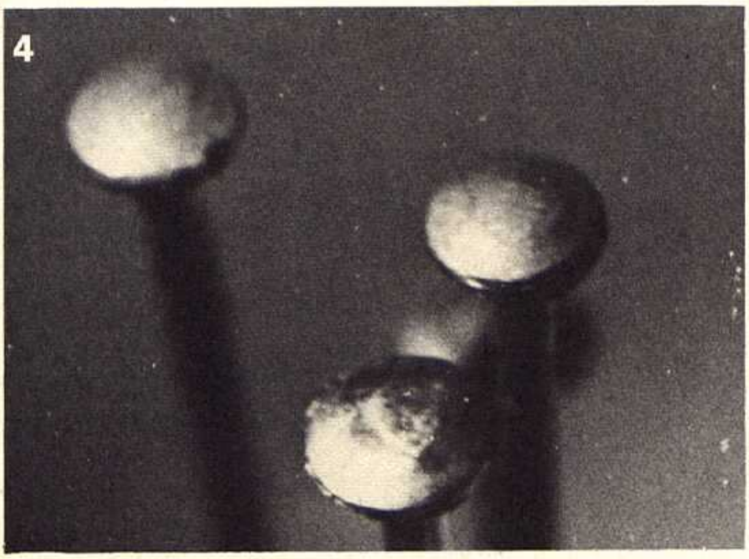
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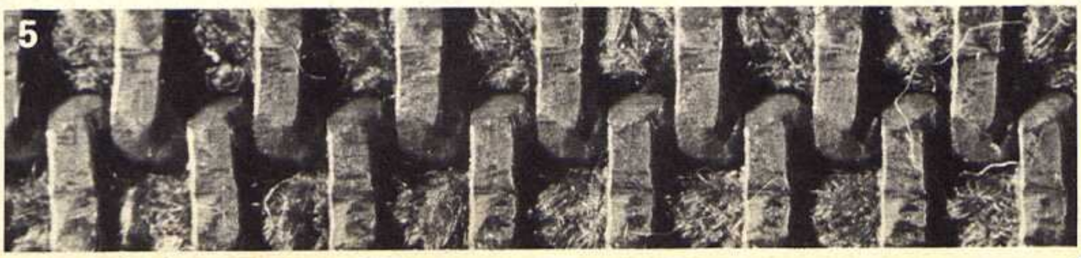
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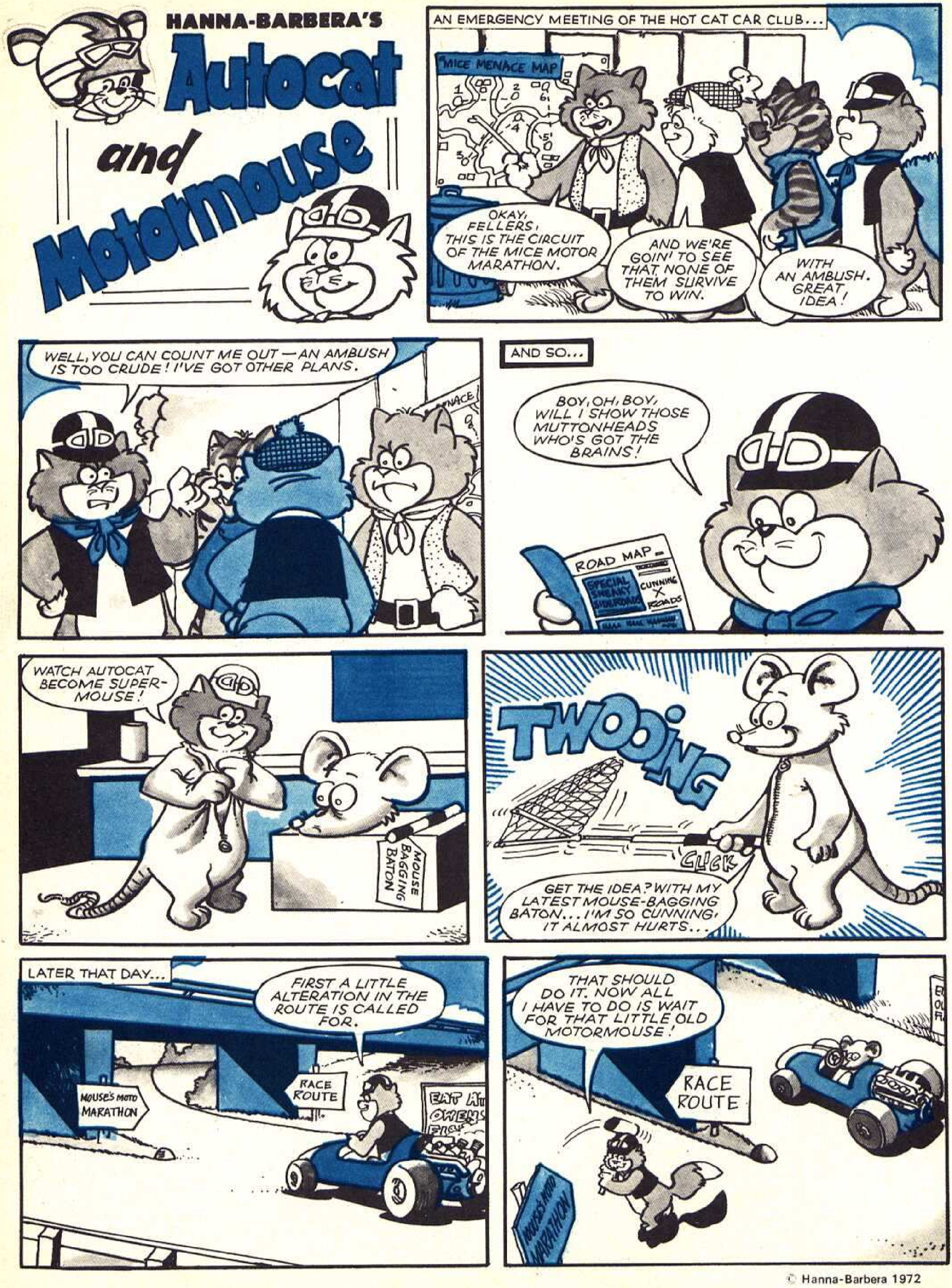
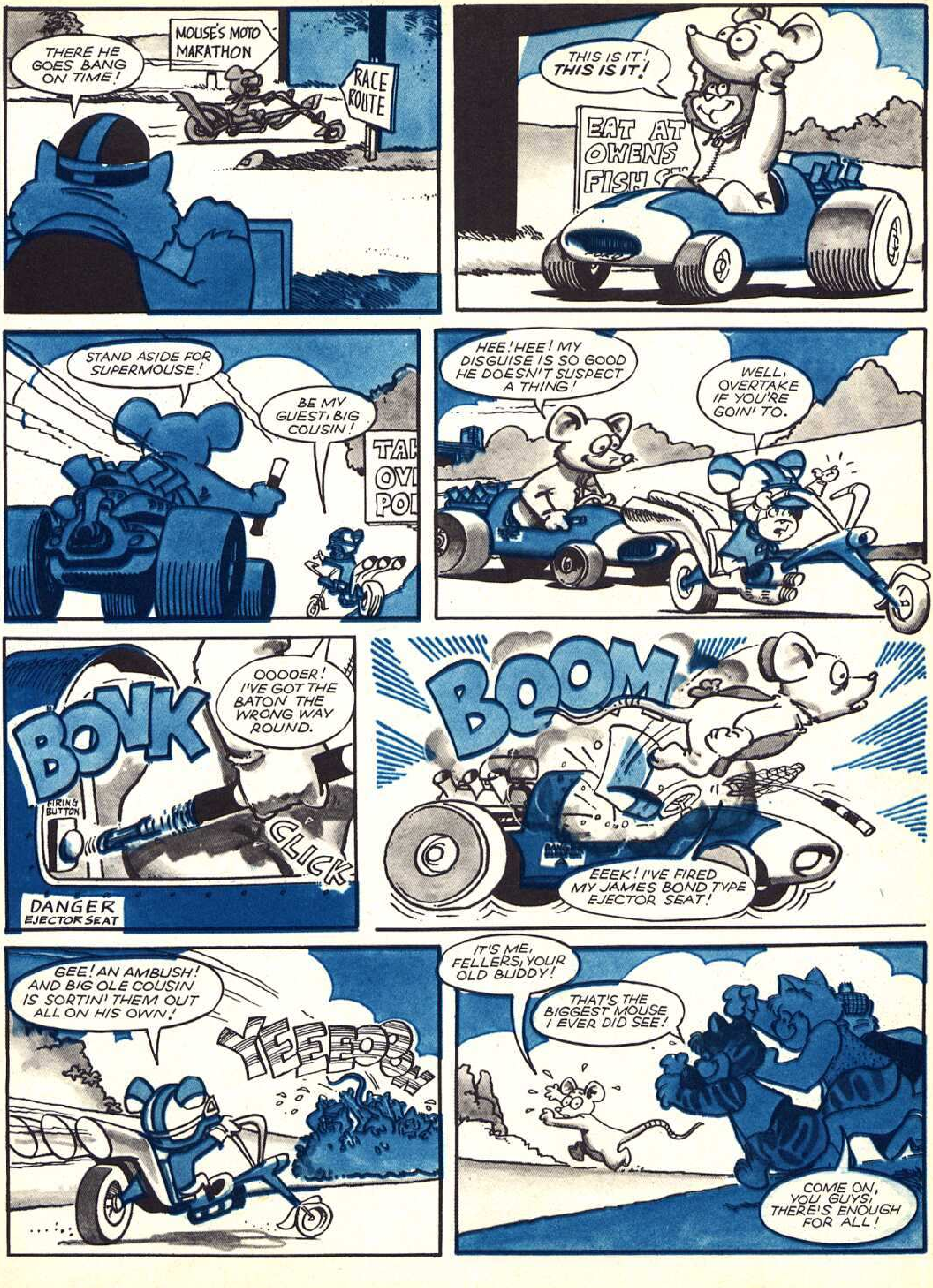
Answers on Page 77

HANNA-BARBERA'S

Autocat and Motormouse


AN EMERGENCY MEETING OF THE HOT CAT CAR CLUB...
MICE MENACE MAP
OKAY, FELLERS, THIS IS THE CIRCUIT OF THE MICE MOTOR MARATHON.
AND WE'RE GOIN' TO SEE THAT NONE OF THEM SURVIVE TO WIN.
WITH AN AMBUSH. GREAT IDEA!
WELL, YOU CAN COUNT ME OUT — AN AMBUSH IS TOO CRUDE! I'VE GOT OTHER PLANS.
AND SO...
BOY, OH, BOY, WILL I SHOW THOSE MUTTONHEADS WHO'S GOT THE BRAINS!
ROAD MAP
SPECIAL SNEAKY SIDEROADS
CUNNING X ROADS
WATCH AUTOCAT BECOME SUPER-MOUSE!
MOUSE BAGGING BATON
TWOOING
CLICK
GET THE IDEA? WITH MY LATEST MOUSE-BAGGING BATON... I'M SO CUNNING, IT ALMOST HURTS...
LATER THAT DAY...
FIRST A LITTLE ALTERATION IN THE ROUTE IS CALLED FOR.
MOUSE'S MOTO MARATHON
RACE ROUTE
THAT SHOULD DO IT. NOW ALL I HAVE TO DO IS WAIT FOR THAT LITTLE OLD MOTORMOUSE!
RACE ROUTE
MOUSE'S MOTO MARATHON

© Hanna-Barbera 1972


MOUSE'S MOTO MARATHON
THERE HE GOES BANG ON TIME!
RACE ROUTE
THIS IS IT! THIS IS IT!
EAT AT OWENS FISH
STAND ASIDE FOR SUPERMOUSE!
BE MY GUEST, BIG COUSIN!
HEE! HEE! MY DISGUISE IS SO GOOD HE DOESN'T SUSPECT A THING!
WELL, OVERTAKE IF YOU'RE GOIN' TO.
BONK
OOOOER! I'VE GOT THE BATON THE WRONG WAY ROUND.
FIRING BUTTON
CLICK
DANGER EJECTOR SEAT
BOOM
EEEK! I'VE FIRED MY JAMES BOND TYPE EJECTOR SEAT!
GEE! AN AMBUSH! AND BIG OLE COUSIN IS SORTIN' THEM OUT ALL ON HIS OWN!
YEEEOOW
IT'S ME, FELLERS, YOUR OLD BUDDY!
THAT'S THE BIGGEST MOUSE I EVER DID SEE!
COME ON, YOU GUYS, THERE'S ENOUGH FOR ALL!

BLUE STREAK

THE ROCKET THAT CAME BACK

Blue Streak was originally developed as a military weapon, a missile or rocket, carrying a deadly explosive cargo – a nuclear warhead.

It was a missile that was much argued about. Born in the 1950s, it was ahead of its time and consequently cost a great deal of government money in development. At the same time, the Americans were making great strides in missile technology and Britain eventually came to rely on their nuclear power for her defence.

This left Blue Streak on the shelf. It was neglected, but not forgotten, though, for millions of man hours had been spent on the construction of a rocket that was the pride of British engineering. The top brains of our aerospace industry helped to create Blue Streak and this valuable expertise just couldn't be thrown away. So a new Blue Streak was born – the Blue Streak satellite launcher.

Such has been the progress in rocketry, that Blue Streak is now a dwarf beside some American launch vehicles. If it could be placed alongside an Apollo launcher, for instance, it would only reach half way! However, the sophistication of the machine should not be underestimated.

A team of European countries is working on the development of a launcher from the original Blue Streak rocket – a sort of European NASA. There are now four stages representing the countries involved in the project: Italy, Germany, France and Britain.

Although the British government will drop out of the European Launcher Development Organisation (ELDO), work will continue in Britain under contract to Hawker Siddeley. All four stages of the new Blue Streak are now undergoing complex test procedures at Hawker Siddeley Dynamics' Stevenage factory.

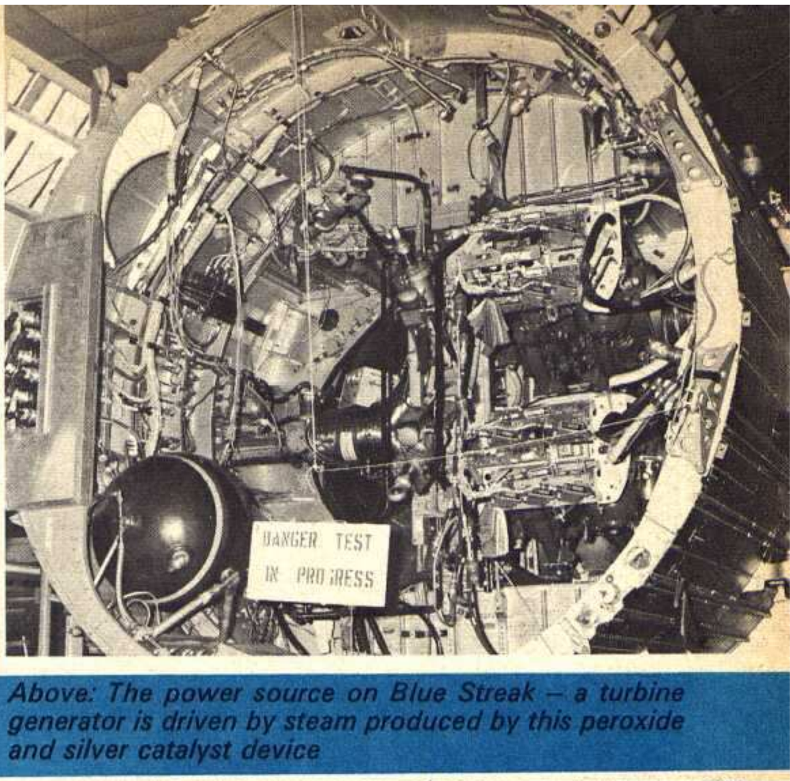
Vast steel frames support the stages as they are subjected to tests for reliability with computers. These structures form a dual purpose, for they form part of special wheeled containers which are used to transport the rocket parts along the public roads. In fact, these containers – the ground-handling frames – have been used to ship the stages to and from the participant factories on the continent.

It comes as a surprise to see that the stages are not the perfectly formed technological wonders that some of us expect of the space age. In fact the body of the largest stage is a mass of rippled metal! The reason for this is quite simple: the shell of the rocket just isn't strong enough to support its own weight. It would take an extremely thick and, consequently, heavy metal to take the strain.

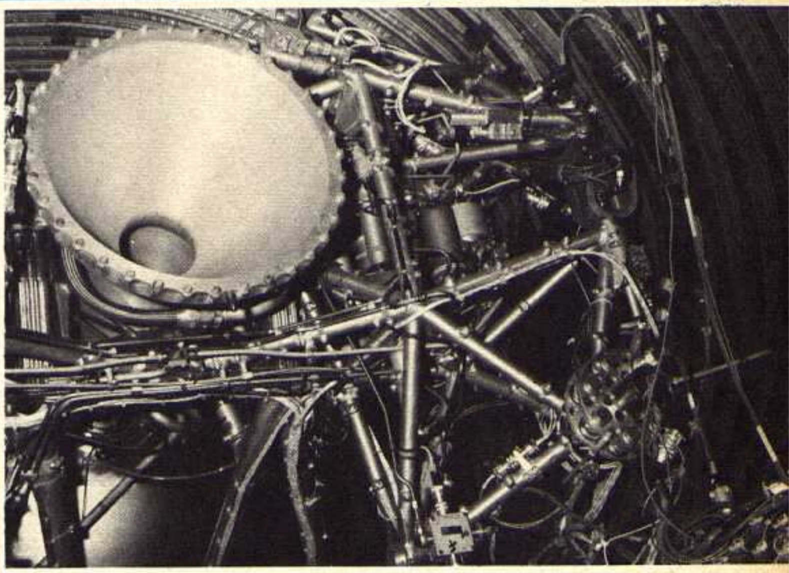
When the vehicle is ready for launching this stress difficulty is no problem, for the shell is filled with the liquid-oxygen fuel, like a balloon. So, even during assembly, this 'blown-up' condition has to be at least partly simulated. The answer is to fill out the rocket with a cheap, safe gas – nitrogen, the most common gas in the air we breath. Pumped up to a pressure only 5 pounds above Earth air pressure (approx. 20 lb. per sq. in.), the rocket shell is both safe and rigid.

Fuel for the first stage of the launcher is a mixture of lox (liquid oxygen) and Kero (kerosene).

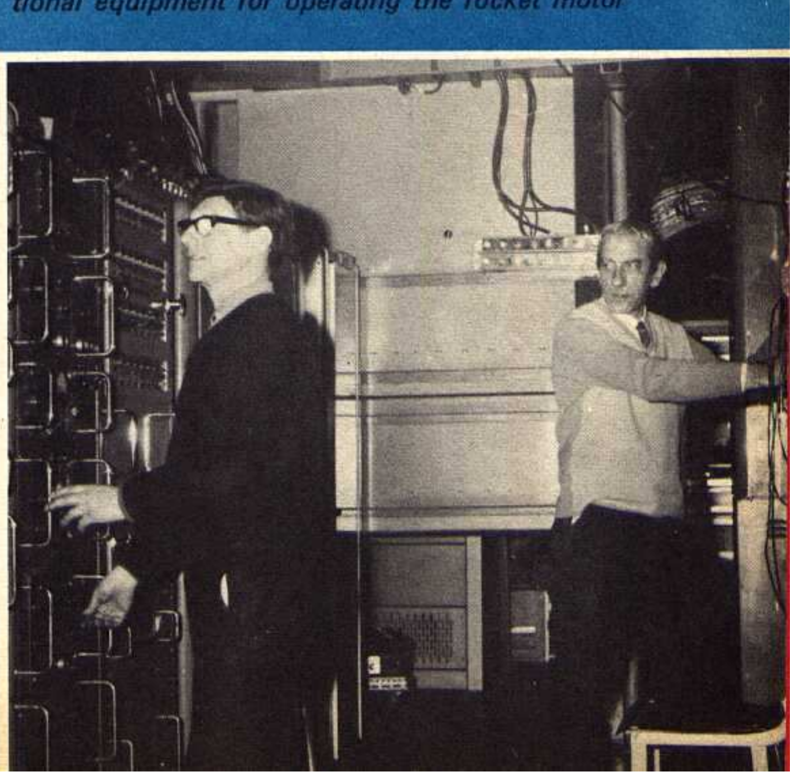
Kero (the American name has stuck for



Above: The power source on Blue Streak – a turbine generator is driven by steam produced by this peroxide and silver catalyst device



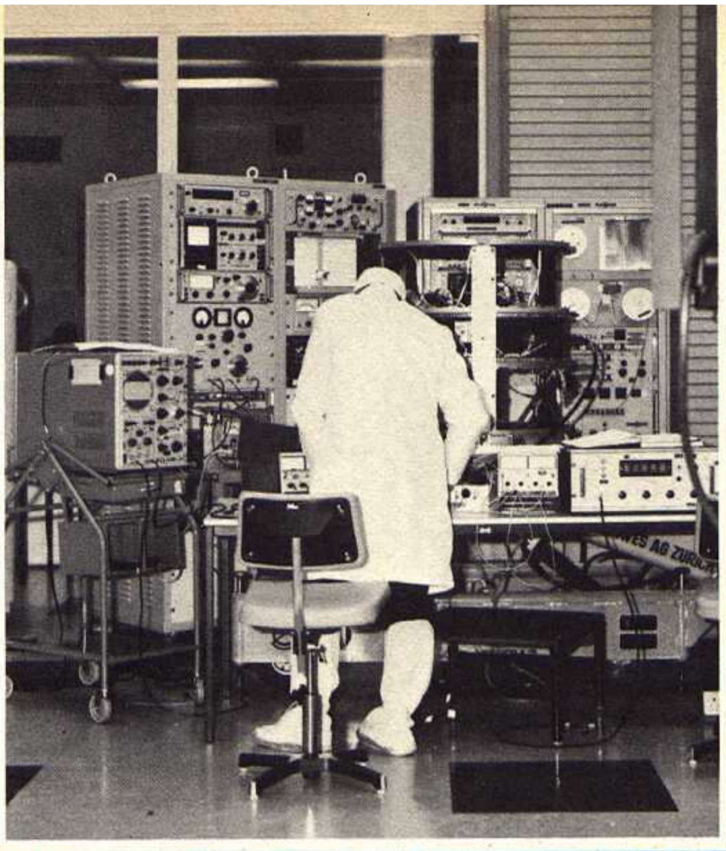
Above: The German stage, showing the multi-directional equipment for operating the rocket motor



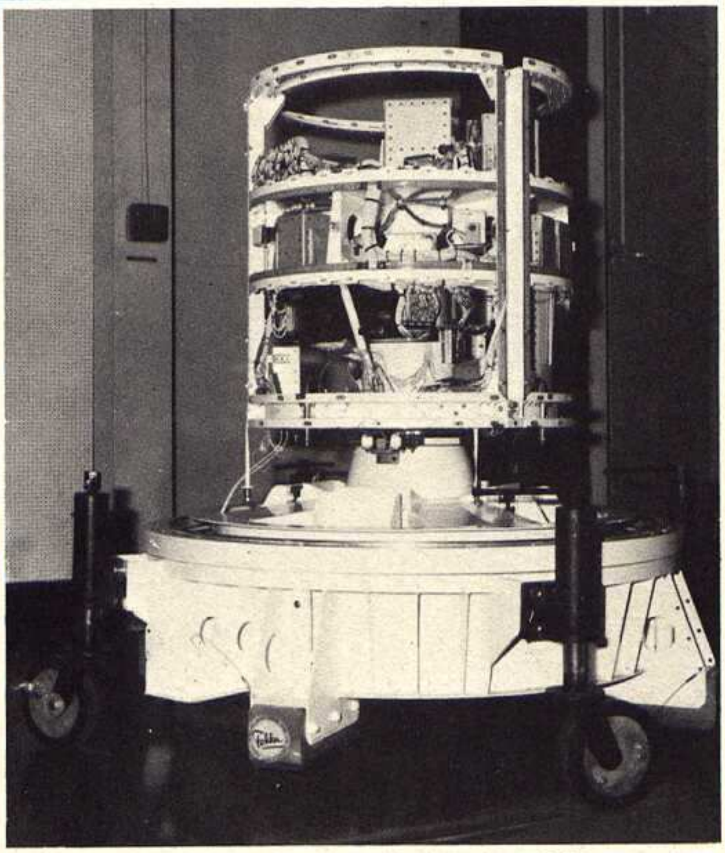
Right: Constant monitoring is essential in a complex operation of this kind aerospace use) is actually a refined form of paraffin, widely used by jet aircraft as a fuel. On its own it would be useless for getting a rocket into orbit. But with oxygen, the mixture becomes immensely powerful – like a supercharged blowlamp! Because oxygen liquefies at a very low temperature, so this supercooled fuel has to be injected into the rocket just prior to blast-off. Such is the attention to detail that both the lox and the kero fuel are manufactured at the launch site, just to make sure that there are no impurities.

An engineer at Hawker Siddeley explained the difficulties with liquid oxygen and how the freezing of the kerosene fuel had to be avoided by using special heaters within the motors of the rocket.

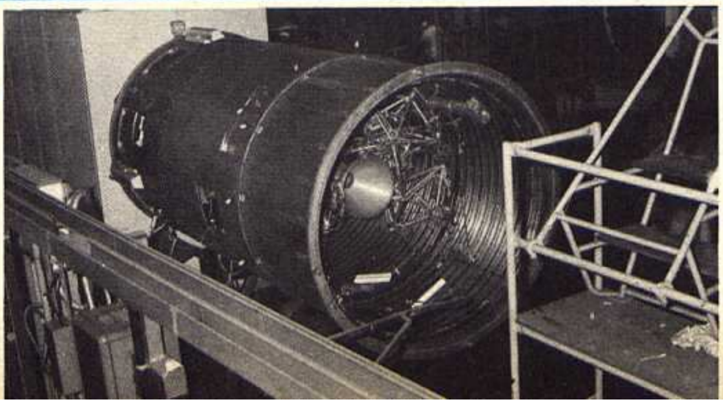
Another major problem with fuel was concerned with the movement of the kerosene within the rocket. At blast-off, the fuel would slosh about if the sideways motion or vibration was too severe. Surprisingly, this was sufficient to affect the performance of the launch vehicle at blast-off, and on one early Blue Streak launches the 'abort' button had to be used as the rocket went wildly off course. After much research into this difficulty, the 'slosh factor' was overcome by fitting 'anti-slosh baffles' in the tanks, like mini-breakwaters.



Above: The Clean Room, where satellites are constructed in contamination-free conditions



Above: The Synphonié satellite on its special transporter

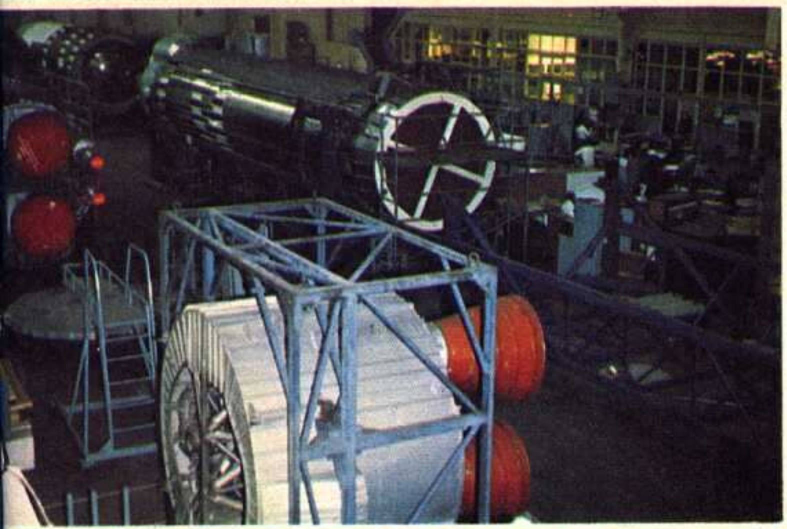


Right: The German (third) stage, showing the control and separation systems

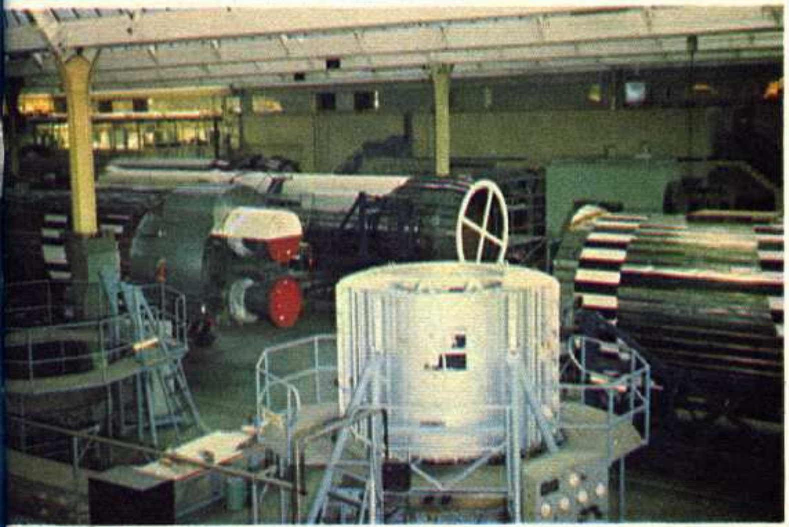
The scene at Hawker Siddeley's Stevenage works today is like a construction kit on a very big scale. The original Blue Streak forms the first and largest stage, the second stage is French, the third German and the nosecone containing the first satellite, *Synphonié*, is Italian.

For this last stage to be manoeuvred into the correct orbit some pretty complex equipment is required. Electronic commands direct the vehicle by means of short burns from rocket nozzles placed at points around the craft. The power for the mass of electronic circuitry comes from a simple yet ingenious generating system. By passing peroxide, in a special spherical container, over silver steam is produced. This then drives a turbine which is coupled to a generator. It's very much like a miniature power station, but with somewhat more expensive materials – a demonstration of how high costs have to be ignored in the quest for a lightweight and efficient system. Costs which have led the Americans to build a reusable space launch method – the Space Shuttle.

When all the stages are complete, they undergo the most rigorous testing. All the electronic components are checked and double checked. The satellite itself comes under particularly close scrutiny in its testing and assembly; for this is the one part of the machinery that will remain in space.



Above: Propulsion bay and multi-nation stages under construction at Hawker Siddeley's Stevenage installation



Above: The vast assembly area of Britain's space factory – the Synphonié satellite stage is in the foreground

The assembly of the satellite takes place in the Laminar Flow Area. A vast 'clean room' – cleaner than any hospital – has been specially built for the satellite workers while they put the satellite together.

The purpose of extreme cleanliness is partly to avoid bacteriological contamination and partly to ensure that no dirt can interfere with the operation of the satellite's experiments and electronics.

The spaghetti-like wiring of the satellite is too complicated to risk a mistake on the wiring up of the real thing. Instead, a wooden model is made of the satellite so that any mistakes can be made on something which can stand the strain of being rewired.

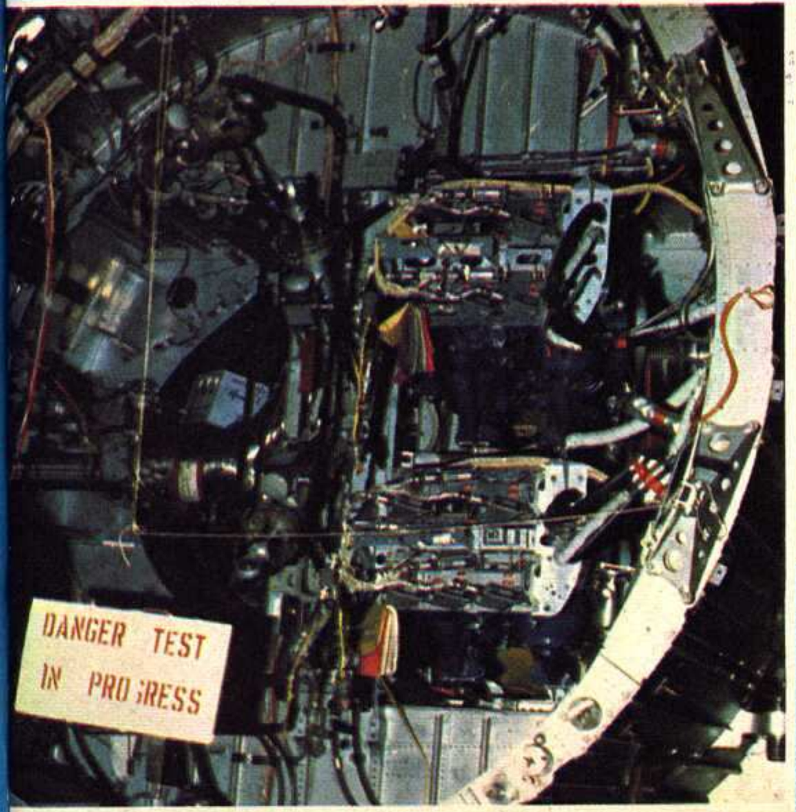
The satellite is both delicate and expensive. The solar panels, for instance, cost about £15,000 each – a bit too expensive to accidentally drop!

The final assembly of the satellite is completed in the clean room, where the air-conditioning is so good that the few remaining specks of dust in the room can actually be counted! Backing the clean room is another room separated by a glass partition. Here, scientists study banks of computers, checking both the electronic reliability of the satellite and the condition of the air in the clean room.

Finally, just to make sure that nothing 'drops off' the satelite is placed in a vast mechanical 'saltcellar' which simulates the sort of vibrations experienced at blast-off. It works like a scaled-up loudspeaker, an electric current causing a coil to vibrate.

When all this checking and double checking is over, the entire rocket will be taken to the Equatorial Launch Site at Kourou, French Guiana, firstly for a test firing – just to make sure that the rocket motors work. Then, Blue Streak will be blasted off in the last half of 1972. The satellite might look small against America's efforts but should at least prove that a united European effort can achieve something in the end.

Perhaps the greatest achievement, though, is that Blue Streak, an 'obsolete' rocket, has lasted so long. Long enough, we hope, to get Europe into space.

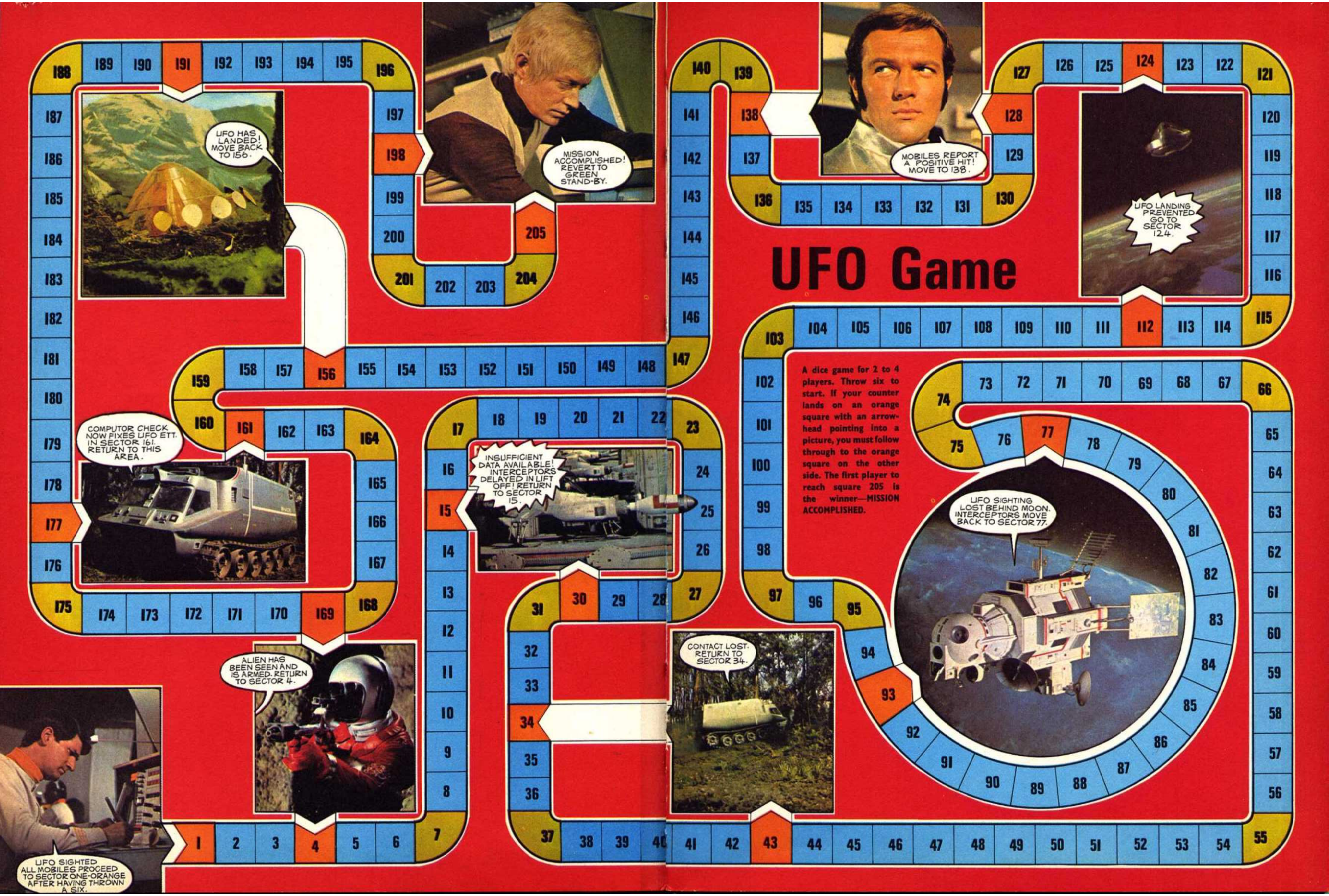


Above: The main stage, showing the rocket motors with protective coverings over the exhaust ports

Left: Complex control systems undergo testing to ensure that the stage fires and separates efficiently

UFO Game

A dice game for 2 to 4 players. Throw six to start. If your counter lands on an orange square with an arrow-head pointing into a picture, you must follow through to the orange square on the other side. The first player to reach square 205 is the winner—MISSION ACCOMPLISHED.


UFO SIGHTED ALL MOBILES PROCEED TO SECTOR ONE-ORANGE AFTER HAVING THROWN A SIX.
ALIEN HAS BEEN SEEN AND IS ARMED. RETURN TO SECTOR 4.
COMPUTOR CHECK NOW FIXES UFO ETT. IN SECTOR 161. RETURN TO THIS AREA.
UFO HAS LANDED! MOVE BACK TO 156.
MISSION ACCOMPLISHED! REVERT TO GREEN STAND-BY.
INSUFFICIENT DATA AVAILABLE! INTERCEPTORS DELAYED IN LIFT OFF! RETURN TO SECTOR 15.
CONTACT LOST. RETURN TO SECTOR 34.
MOBILES REPORT A POSITIVE HIT! MOVE TO 138.
UFO LANDING PREVENTED GO TO SECTOR 124.
UFO SIGHTING LOST BEHIND MOON. INTERCEPTORS MOVE BACK TO SECTOR 77.

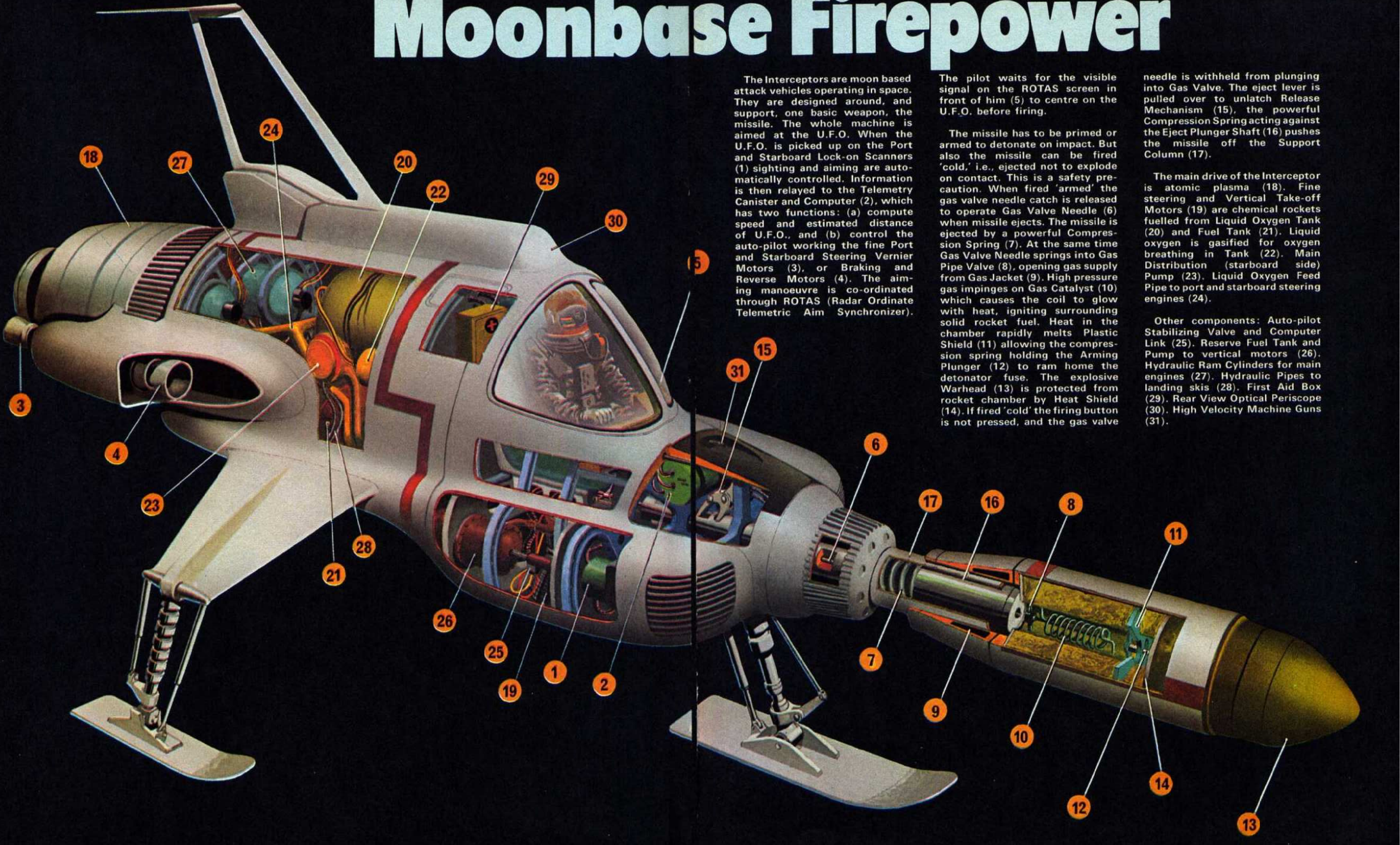
Moonbase Firepower

The Interceptors are moon based attack vehicles operating in space. They are designed around, and support, one basic weapon, the missile. The whole machine is aimed at the U.F.O. When the U.F.O. is picked up on the Port and Starboard Lock-on Scanners (1) sighting and aiming are automatically controlled. Information is then relayed to the Telemetry Canister and Computer (2), which has two functions: (a) compute speed and estimated distance of U.F.O., and (b) control the auto-pilot working the fine Port and Starboard Steering Vernier Motors (3), or Braking and Reverse Motors (4). The aiming manoeuvre is co-ordinated through ROTAS (Radar Ordinate Telemetric Aim Synchronizer). The pilot waits for the visible signal on the ROTAS screen in front of him (5) to centre on the U.F.O. before firing.

The missile has to be primed or armed to detonate on impact. But also the missile can be fired 'cold,' i.e., ejected not to explode on contact. This is a safety precaution. When fired 'armed' the gas valve needle catch is released to operate Gas Valve Needle (6) when missile ejects. The missile is ejected by a powerful Compression Spring (7). At the same time Gas Valve Needle springs into Gas Pipe Valve (8), opening gas supply from Gas Jacket (9). High pressure gas impinges on Gas Catalyst (10) which causes the coil to glow with heat, igniting surrounding solid rocket fuel. Heat in the chamber rapidly melts Plastic Shield (11) allowing the compression spring holding the Arming Plunger (12) to ram home the detonator fuse. The explosive Warhead (13) is protected from rocket chamber by Heat Shield (14). If fired 'cold' the firing button is not pressed, and the gas valve needle is withheld from plunging into Gas Valve. The eject lever is pulled over to unlatch Release Mechanism (15), the powerful Compression Spring acting against the Eject Plunger Shaft (16) pushes the missile off the Support Column (17).

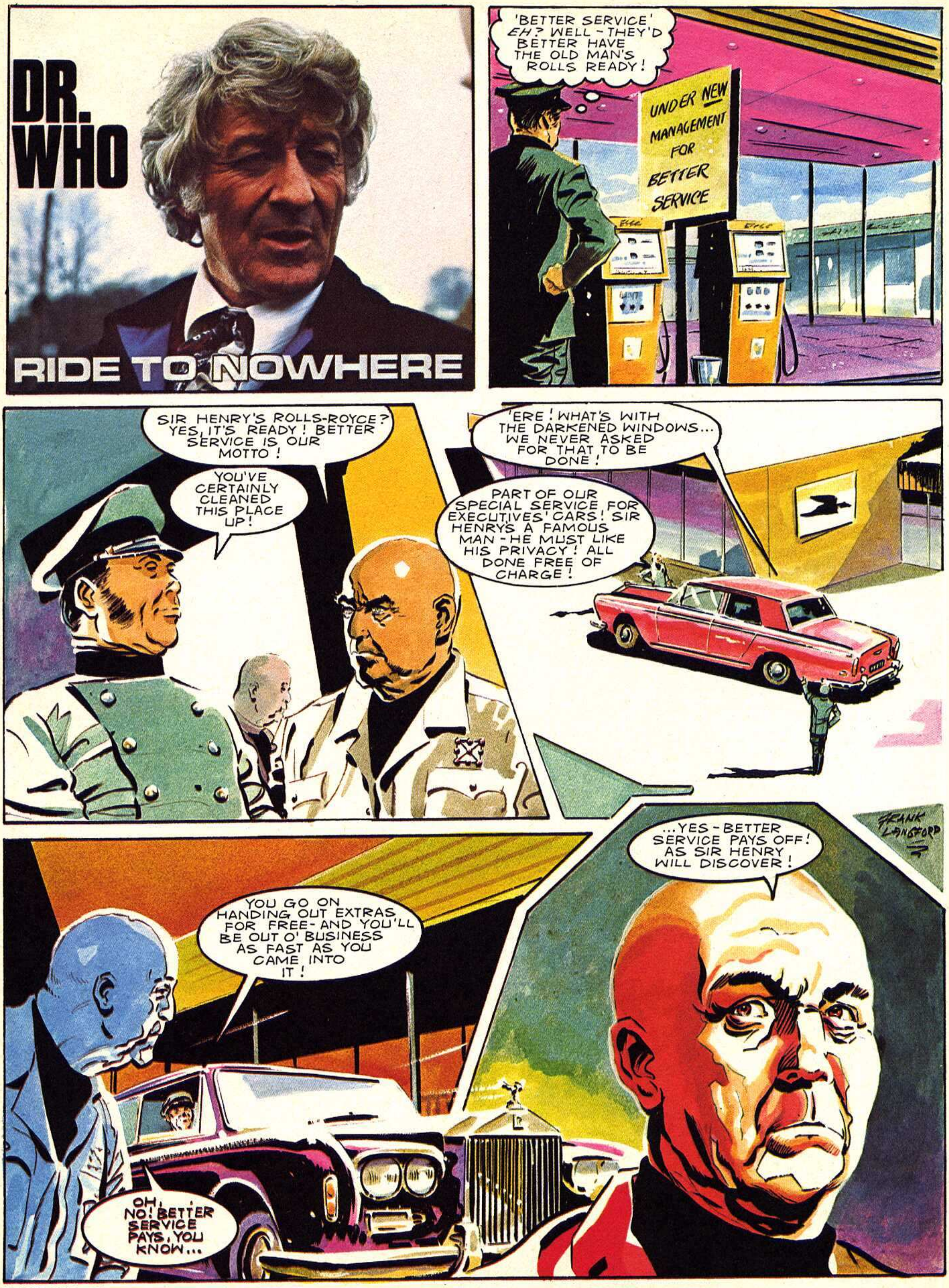
The main drive of the Interceptor is atomic plasma (18). Fine steering and Vertical Take-off Motors (19) are chemical rockets fuelled from Liquid Oxygen Tank (20) and Fuel Tank (21). Liquid oxygen is gasified for oxygen breathing in Tank (22). Main Distribution (starboard side) Pump (23). Liquid Oxygen Feed Pipe to port and starboard steering engines (24).

Other components: Auto-pilot Stabilizing Valve and Computer Link (25). Reserve Fuel Tank and Pump to vertical motors (26). Hydraulic Ram Cylinders for main engines (27). Hydraulic Pipes to landing skis (28). First Aid Box (29). Rear View Optical Periscope (30). High Velocity Machine Guns (31).



DR. WHO

RIDE TO NOWHERE


'BETTER SERVICE' EH? WELL - THEY'D BETTER HAVE THE OLD MAN'S ROLLS READY!
UNDER NEW MANAGEMENT FOR BETTER SERVICE
SIR HENRY'S ROLLS-ROYCE? YES, IT'S READY! BETTER SERVICE IS OUR MOTTO!
YOU'VE CERTAINLY CLEANED THIS PLACE UP!
'ERE! WHAT'S WITH THE DARKENED WINDOWS... WE NEVER ASKED FOR THAT TO BE DONE!
PART OF OUR SPECIAL SERVICE FOR EXECUTIVES' CARS! SIR HENRY'S A FAMOUS MAN - HE MUST LIKE HIS PRIVACY! ALL DONE FREE OF CHARGE!
FRANK LANGFORD
YOU GO ON HANDING OUT EXTRAS FOR FREE - AND YOU'LL BE OUT O' BUSINESS AS FAST AS YOU CAME INTO IT!
OH, NO! BETTER SERVICE PAYS, YOU KNOW...
...YES - BETTER SERVICE PAYS OFF! AS SIR HENRY WILL DISCOVER!

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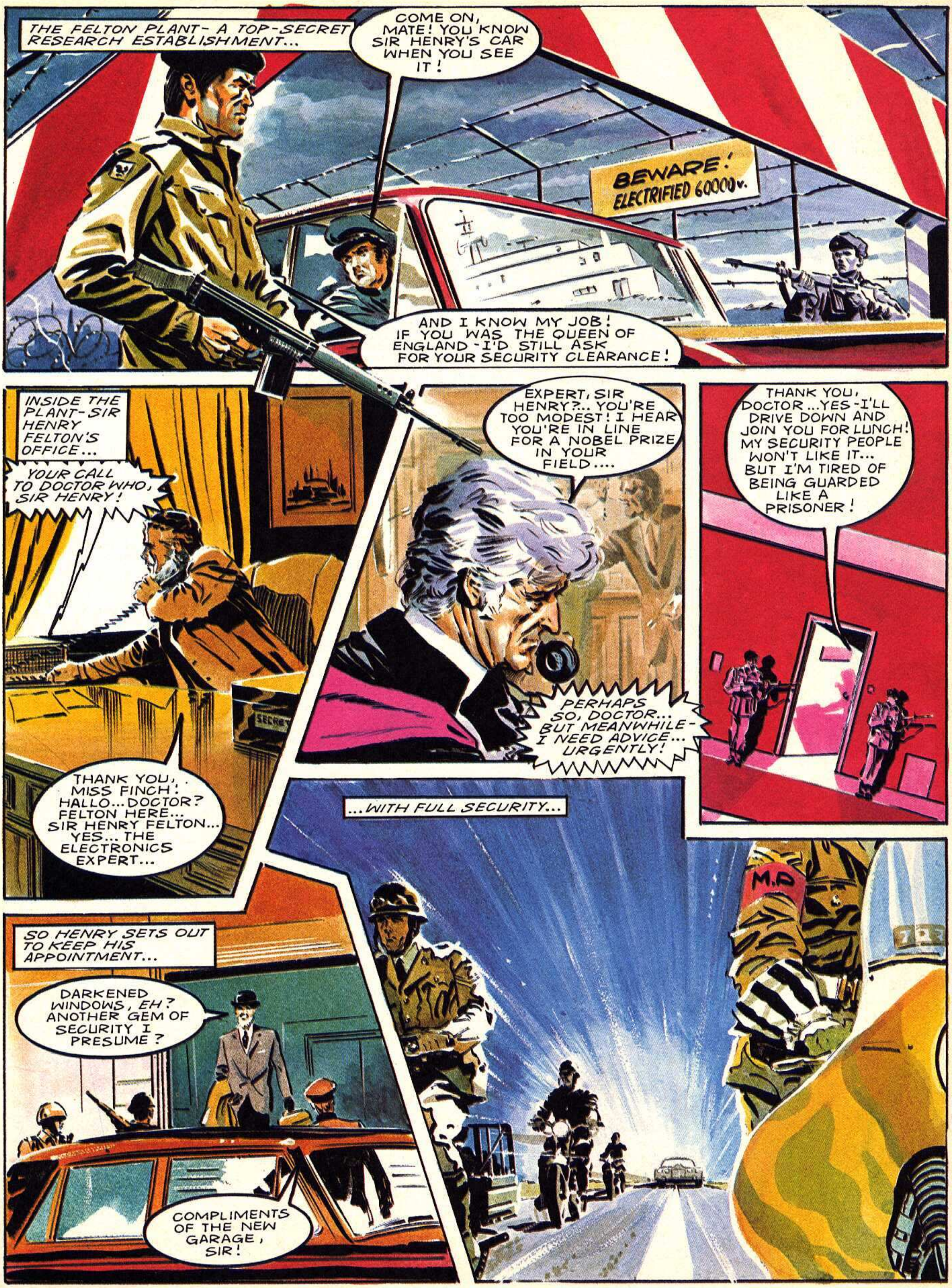
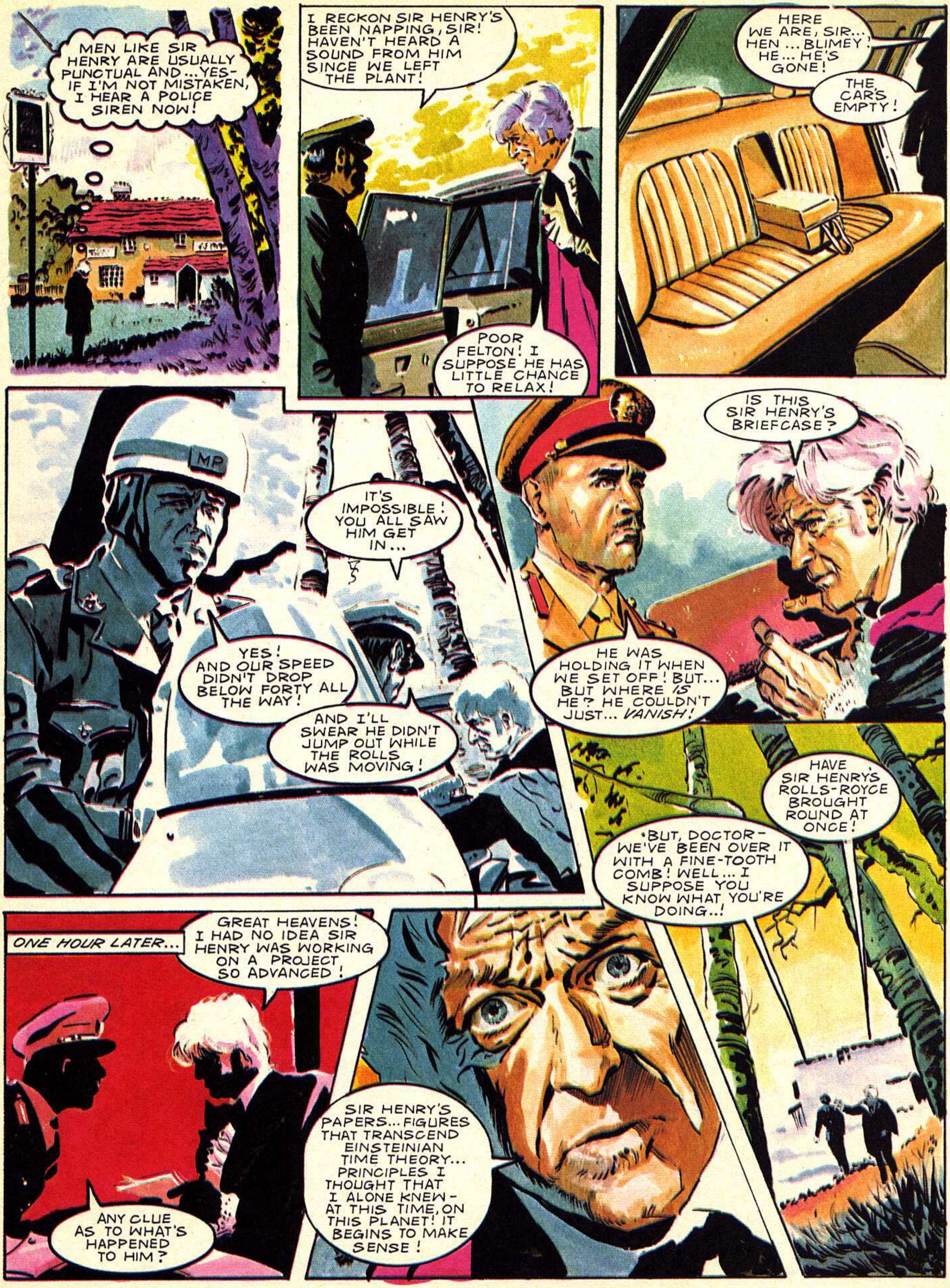
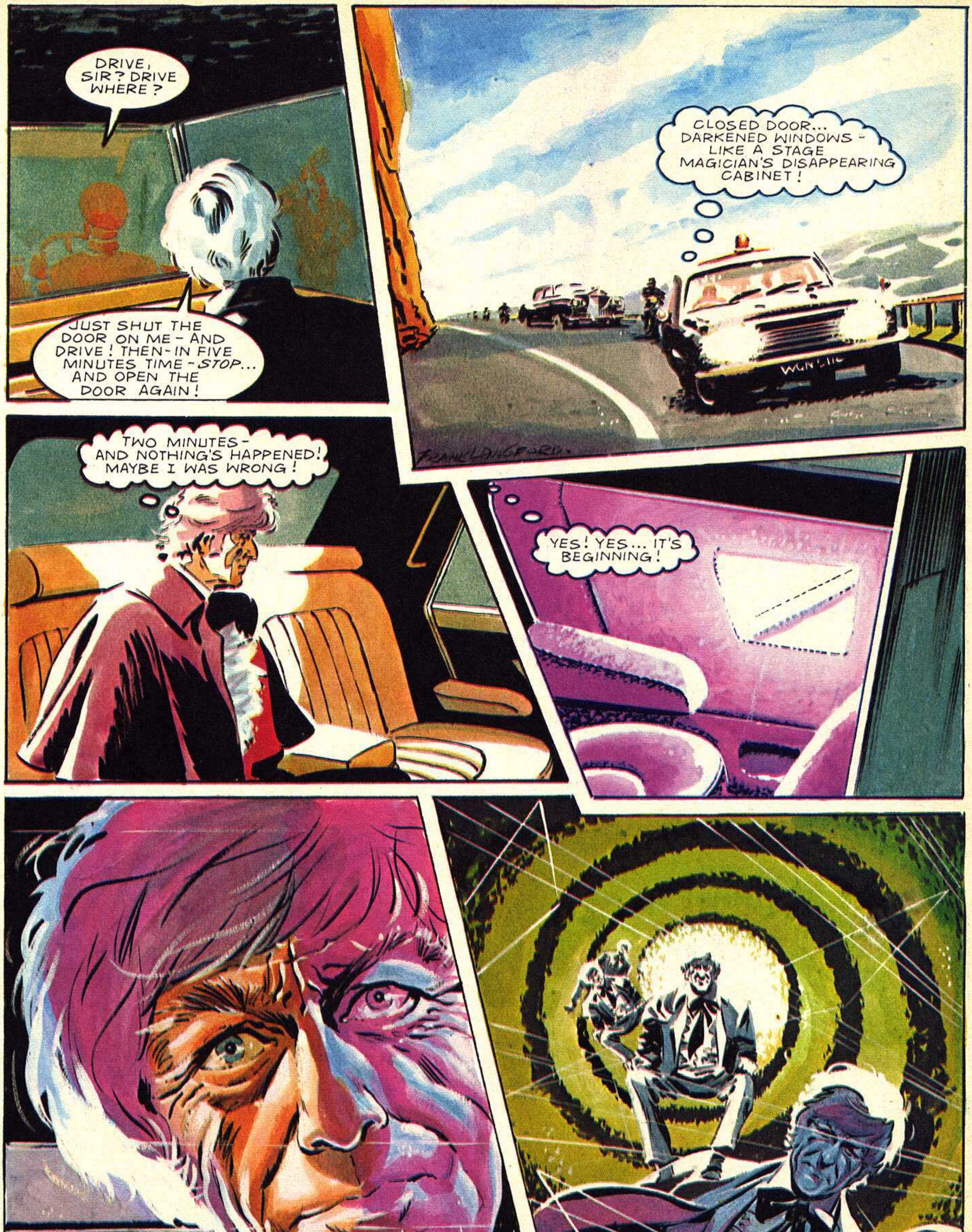
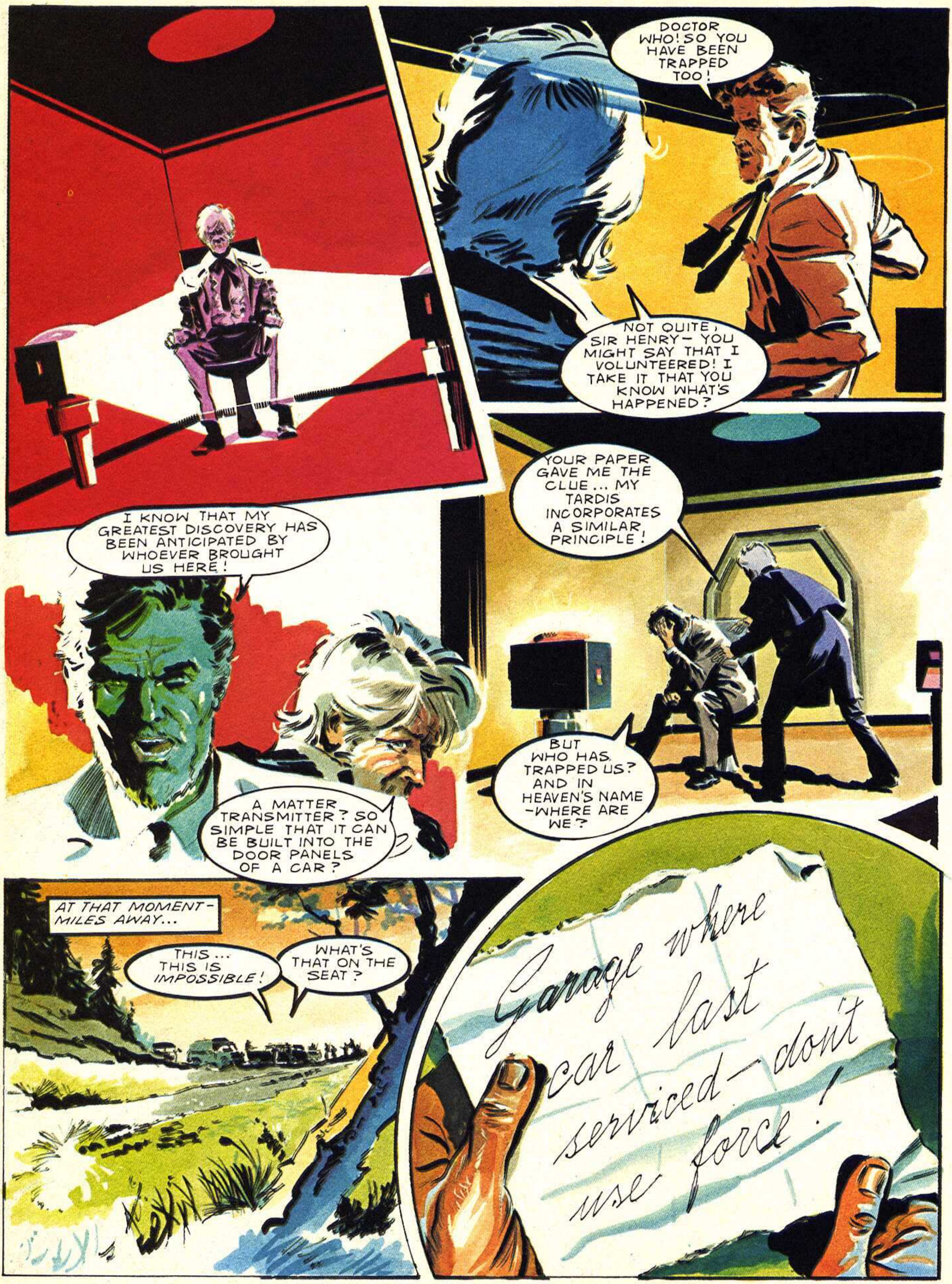
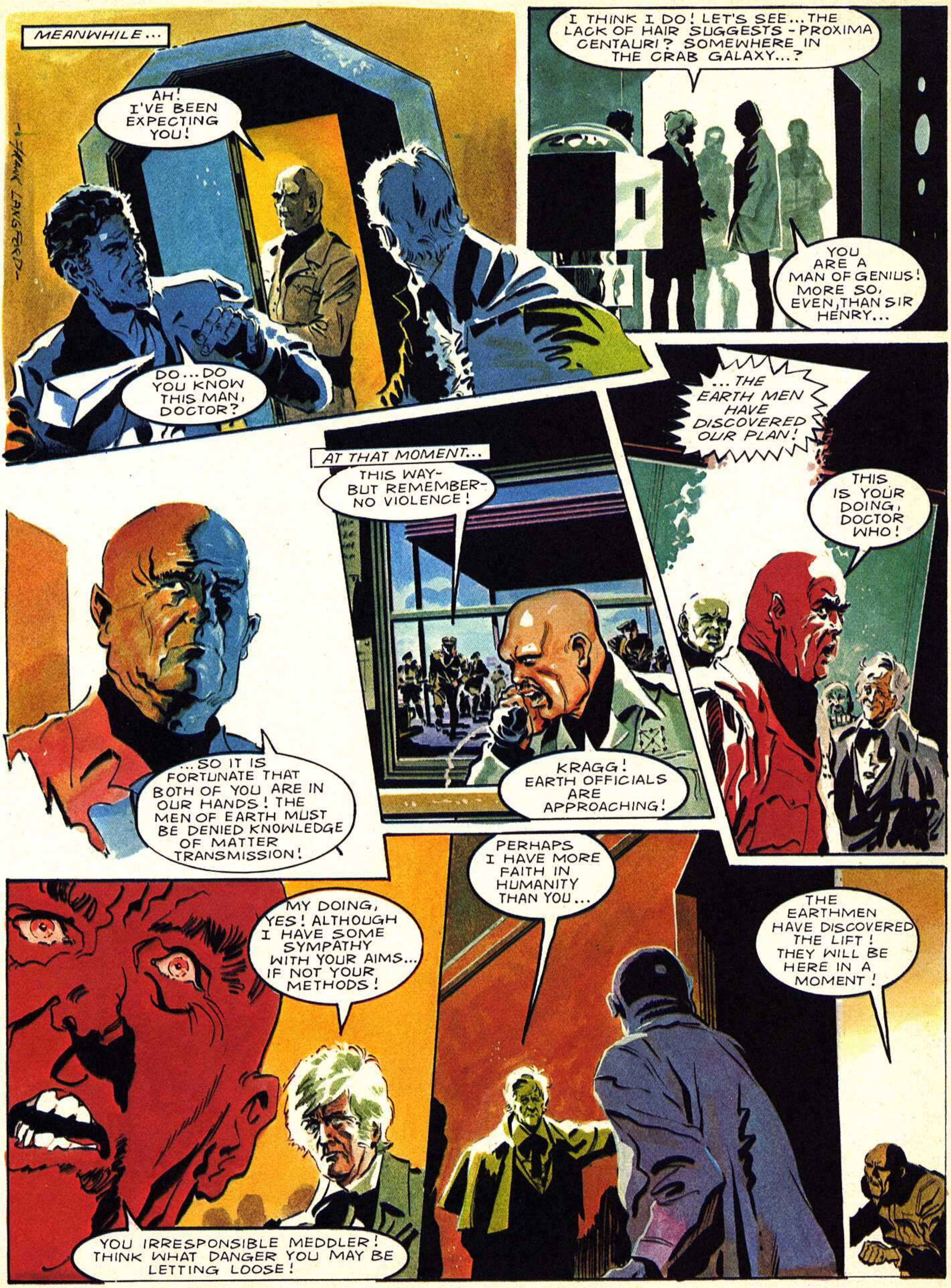
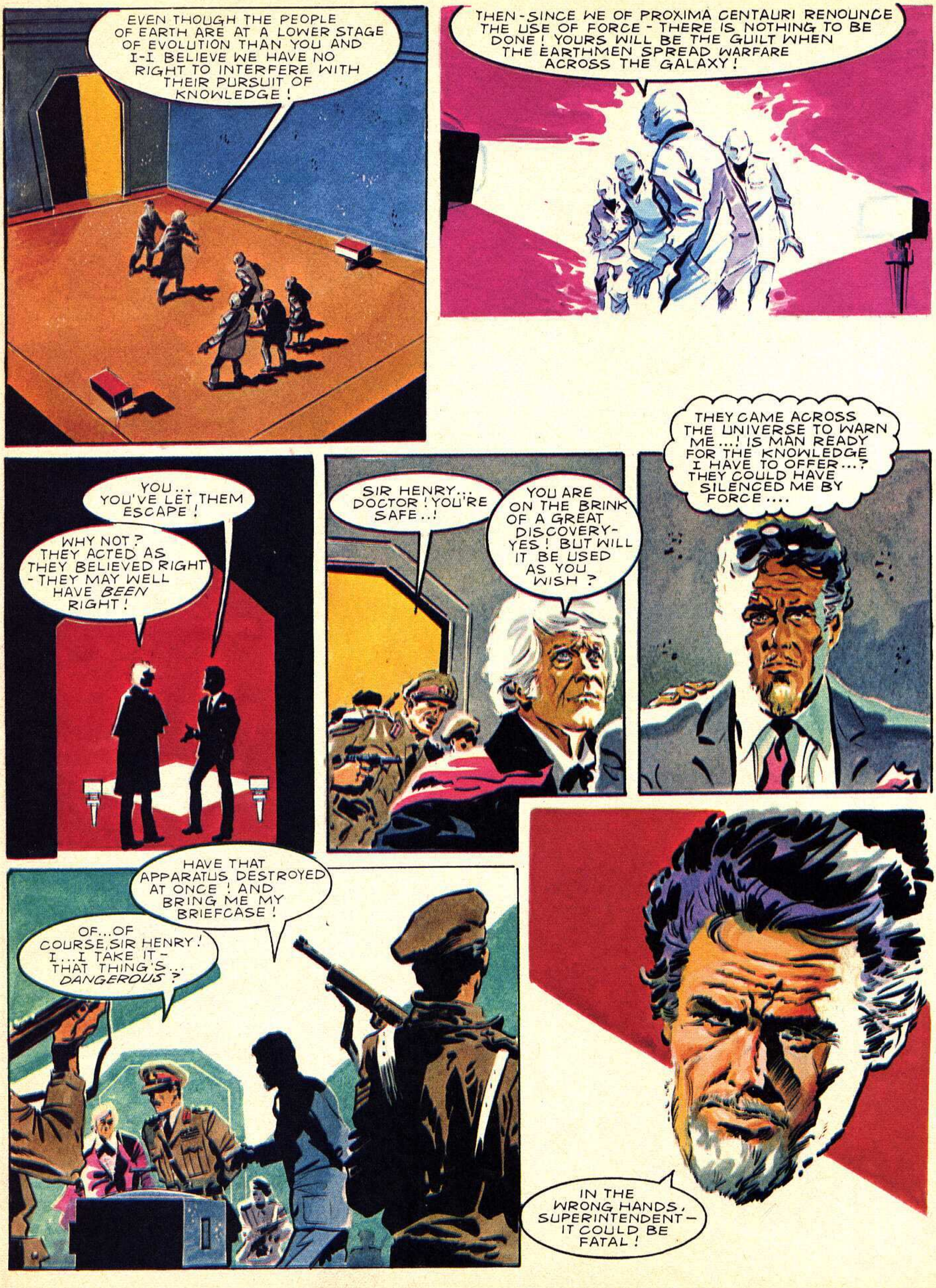

THE FELTON PLANT- A TOP-SECRET RESEARCH ESTABLISHMENT...
COME ON, MATE! YOU KNOW SIR HENRY'S CAR WHEN YOU SEE IT!
BEWARE! ELECTRIFIED 6000v.
AND I KNOW MY JOB! IF YOU WAS THE QUEEN OF ENGLAND - I'D STILL ASK FOR YOUR SECURITY CLEARANCE!
INSIDE THE PLANT- SIR HENRY FELTON'S OFFICE...
YOUR CALL TO DOCTOR WHO, SIR HENRY!
SECRET
THANK YOU, MISS FINCH! HALLO... DOCTOR? FELTON HERE... SIR HENRY FELTON... YES... THE ELECTRONICS EXPERT...
EXPERT, SIR HENRY?... YOU'RE TOO MODEST! I HEAR YOU'RE IN LINE FOR A NOBEL PRIZE IN YOUR FIELD....
PERHAPS SO, DOCTOR... BUT MEANWHILE- I NEED ADVICE... URGENTLY!
THANK YOU, DOCTOR... YES - I'LL DRIVE DOWN AND JOIN YOU FOR LUNCH! MY SECURITY PEOPLE WON'T LIKE IT... BUT I'M TIRED OF BEING GUARDED LIKE A PRISONER!
SO HENRY SETS OUT TO KEEP HIS APPOINTMENT...
DARKENED WINDOWS, EH? ANOTHER GEM OF SECURITY I PRESUME?
COMPLIMENTS OF THE NEW GARAGE, SIR!
...WITH FULL SECURITY...
M.P


MEN LIKE SIR HENRY ARE USUALLY PUNCTUAL AND... YES- IF I'M NOT MISTAKEN, I HEAR A POLICE SIREN NOW!
I RECKON SIR HENRY'S BEEN NAPPING, SIR! HAVEN'T HEARD A SOUND FROM HIM SINCE WE LEFT THE PLANT!
POOR FELTON! I SUPPOSE HE HAS LITTLE CHANCE TO RELAX!
HERE WE ARE, SIR... HEN... BLIMEY! HE... HE'S GONE!
THE CAR'S EMPTY!
IT'S IMPOSSIBLE! YOU ALL SAW HIM GET IN...
YES! AND OUR SPEED DIDN'T DROP BELOW FORTY ALL THE WAY!
AND I'LL SWEAR HE DIDN'T JUMP OUT WHILE THE ROLLS WAS MOVING!
MP
IS THIS SIR HENRY'S BRIEFCASE?
HE WAS HOLDING IT WHEN WE SET OFF! BUT... BUT WHERE *IS* HE? HE COULDN'T JUST... *VANISH!*
HAVE SIR HENRY'S ROLLS-ROYCE BROUGHT ROUND AT ONCE!
BUT, DOCTOR- WE'VE BEEN OVER IT WITH A FINE-TOOTH COMB! WELL... I SUPPOSE YOU KNOW WHAT YOU'RE DOING..!
ONE HOUR LATER...
GREAT HEAVENS! I HAD NO IDEA SIR HENRY WAS WORKING ON A PROJECT SO ADVANCED!
ANY CLUE AS TO WHAT'S HAPPENED TO HIM?
SIR HENRY'S PAPERS... FIGURES THAT TRANSCEND EINSTEINIAN TIME THEORY... PRINCIPLES I THOUGHT THAT I ALONE KNEW- AT THIS TIME, ON THIS PLANET! IT BEGINS TO MAKE SENSE!


DRIVE, SIR? DRIVE WHERE?
JUST SHUT THE DOOR ON ME - AND DRIVE! THEN - IN FIVE MINUTES TIME - *STOP*... AND OPEN THE DOOR AGAIN!
CLOSED DOOR... DARKENED WINDOWS - LIKE A STAGE MAGICIAN'S DISAPPEARING CABINET!
FRANK LANGFORD.
TWO MINUTES - AND NOTHING'S HAPPENED! MAYBE I WAS WRONG!
YES! YES... IT'S BEGINNING!


DOCTOR WHO! SO YOU HAVE BEEN TRAPPED TOO!
NOT QUITE, SIR HENRY— YOU MIGHT SAY THAT I VOLUNTEERED! I TAKE IT THAT YOU KNOW WHAT'S HAPPENED?
I KNOW THAT MY GREATEST DISCOVERY HAS BEEN ANTICIPATED BY WHOEVER BROUGHT US HERE!
A MATTER TRANSMITTER? SO SIMPLE THAT IT CAN BE BUILT INTO THE DOOR PANELS OF A CAR?
YOUR PAPER GAVE ME THE CLUE... MY TARDIS INCORPORATES A SIMILAR PRINCIPLE!
BUT WHO HAS TRAPPED US? AND IN HEAVEN'S NAME —WHERE ARE WE?
AT THAT MOMENT— MILES AWAY...
THIS... THIS IS *IMPOSSIBLE*!
WHAT'S THAT ON THE SEAT?
Garage where car last serviced— dont use force!


MEANWHILE...
AH! I'VE BEEN EXPECTING YOU!
FRANK LANGFORD
DO...DO YOU KNOW THIS MAN, DOCTOR?
I THINK I DO! LET'S SEE...THE LACK OF HAIR SUGGESTS - PROXIMA CENTAURI? SOMEWHERE IN THE CRAB GALAXY...?
YOU ARE A MAN OF GENIUS! MORE SO, EVEN, THAN SIR HENRY...
...SO IT IS FORTUNATE THAT BOTH OF YOU ARE IN OUR HANDS! THE MEN OF EARTH MUST BE DENIED KNOWLEDGE OF MATTER TRANSMISSION!
AT THAT MOMENT...
THIS WAY- BUT REMEMBER- NO VIOLENCE!
KRAGG! EARTH OFFICIALS ARE APPROACHING!
...THE EARTH MEN HAVE DISCOVERED OUR PLAN!
THIS IS YOUR DOING, DOCTOR WHO!
MY DOING, YES! ALTHOUGH I HAVE SOME SYMPATHY WITH YOUR AIMS... IF NOT YOUR METHODS!
YOU IRRESPONSIBLE MEDDLER! THINK WHAT DANGER YOU MAY BE LETTING LOOSE!
PERHAPS I HAVE MORE FAITH IN HUMANITY THAN YOU...
THE EARTHMEN HAVE DISCOVERED THE LIFT! THEY WILL BE HERE IN A MOMENT!


EVEN THOUGH THE PEOPLE OF EARTH ARE AT A LOWER STAGE OF EVOLUTION THAN YOU AND I-I BELIEVE WE HAVE NO RIGHT TO INTERFERE WITH THEIR PURSUIT OF KNOWLEDGE!
THEN-SINCE WE OF PROXIMA CENTAURI RENOUNCE THE USE OF FORCE-THERE IS NOTHING TO BE DONE! YOURS WILL BE THE GUILT WHEN THE EARTHMEN SPREAD WARFARE ACROSS THE GALAXY!
YOU... YOU'VE LET THEM ESCAPE!
WHY NOT? THEY ACTED AS THEY BELIEVED RIGHT - THEY MAY WELL HAVE *BEEN* RIGHT!
SIR HENRY... DOCTOR! YOU'RE SAFE..!
YOU ARE ON THE BRINK OF A GREAT DISCOVERY- YES! BUT WILL IT BE USED AS YOU WISH?
THEY CAME ACROSS THE UNIVERSE TO WARN ME...! IS MAN READY FOR THE KNOWLEDGE I HAVE TO OFFER...? THEY COULD HAVE SILENCED ME BY FORCE....
HAVE THAT APPARATUS DESTROYED AT ONCE! AND BRING ME MY BRIEFCASE!
OF...OF COURSE, SIR HENRY! I...I TAKE IT- THAT THING'S... *DANGEROUS*?
IN THE WRONG HANDS, SUPERINTENDENT- IT COULD BE FATAL!

The Ed Bishop Story

Stardom is no overnight success story for Edward Bishop, who reached stellar status as the chief of the futuristic defence organisation SHADO, in the 'U.F.O.' series.

He has all the physical attributes that go with stardom: good looks, exactly six feet in height, weighing 155 pounds. (His own light brown hair in the series is hidden beneath a platinum blond wig of futuristic cut.)

An American proud of English ancestry, Ed traces his family right back to 1639, when an ancestor left Guildford, Surrey, to sail to New England and become one of the first settlers in Guildford, Connecticut.

He was born in Brooklyn, New York. It looked as though Ed would follow his father's footsteps into banking when, on leaving college, he studied business administration. However, from quite an early age he had had dreams of being an actor and this ambition was furthered, during his Army service (1954 to 1956), when at Armed Forces Radio, St. John's, Newfoundland, he became a disc jockey.

His Army service complete, he took a two-year course in drama at Boston University, winning a Fulbright Scholarship to continue his studies at the London Academy of Music and Dramatic Art (LAMDA).

Ed's professional career began on 15th July, 1961, as a happy-go-lucky American sailor in 'Look Homeward Angel' at the Pembroke Theatre, Croydon. Next followed a year of frustration, as understudy to Peter Marshall in the West End production of 'Bye Bye Birdie'. During the nine months' run of the show Peter Marshall remained infuriatingly healthy and Ed didn't go on for him at all.

His American debut on Broadway – with an English acent, was in 'The Rehearsal'. "I wouldn't have dared use an English accent in England," he confides, "but I felt I could get away with it in America!" It ran for six months.

After a short stay in Boston, Ed returned to England in 1964, and the Bishop family story completed a full turn of the wheel when he married Hilary Preen, whom he met in Trafalgar Square. His English wife is an economist, whose own career has now faded into the background. They have three young children, two daughters and one son.

Ed has appeared in a variety of films. Amongst the most memorable, Steve McQueen's 'The Warlover', Gerry Anderson's 'Doppleganger' and Kubrick's '2001'. His TV work is extensive with performances in 'The Saint', 'The Baron', 'Court Martial', 'Man in a Suitcase' and many others. He was also the 'voice' of the puppet hero Captain Blue in 'Captain Scarlet'.

In the theatre, he attracted considerable attention from the critics with his portrayal of John Kennedy in Joan Littlewood's production of 'Macbird'. All in all Ed Bishop has come a very long way.

ANSWERS

Page 49

C	O	N	C	O	R	D	E		C	A	M	B	E	R
A		E		U		A				R		E		E
S	P	A	R	T	A	N	S		S	C	O	T	C	H
T		T		L		D				L		E		A
O	P	E	R	A	T	E	S		R	I	F	L	E	S
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F		K		R		S		S		F		F		W
E	A	S	I	E	R		S	T	A	R	F	I	S	H
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E		I		D				N		Z		L		E
S	I	N	G	E	R		A	S	S	E	S	S	O	R

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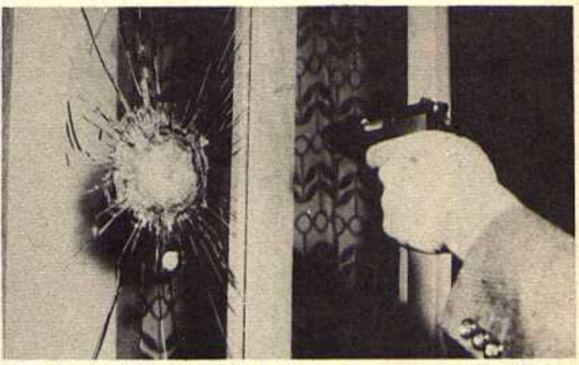
1. This picture gives the answer – he was standing behind bullet-proof glass.



3. It's a picture of the Sun, showing solar flares (the white areas) and sunspots (the black streaks). The shadow is of a jet plane which accidentally got in the way when the picture was being taken by astronomers at Penn State University.

5. The four Presidents are Washington, Jefferson, Lincoln and Theodore Roosevelt

2. US (Venus – Usher)
PIER (Rapier – Pierrot)

4. 35. (The difference between the preceding number and the following number is doubled and added to the following number.)

6. NEW YORK. It is the only one that is not a capital city.

7. SATURN; JUPITER; MARS; EARTH; SUN; MOON; MERCURY; VENUS; PLUTO; URANUS; NEPTUNE.

8. James A. Lovell, John L. Swigert and Fred W. Haise.

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1. A Thimble; 2. Match sticks; 3. Toothpaste; 4. Pinheads; 5. A zip fastner.

countdown annual
FOR
TV action

UFO · Thunderbirds
The Persuaders · Dr. Who
and other TV favourites